ARTISAN



 Public Square, Cleveland, Ohio, convention city of the warm air heating industry. National Wholesalers meet Dec. 3-4; National Warm Air Dec. 5-6.

- Arnold Kruckman analyzes riddle of steel supply. First quarter 1952 allotments listed. Page 25.
- The Narowetz company is a Chicago success story. Employees share in the prosperity of the firm. Page 40.
- An ornamental copper fleche is an increasing rarity. A Baltimore job makes a good story. Page 42.
- Health benefits accrue from year round air conditioning and are potential sales builders: Page 50.

Air Control PERIMETER DIFFUSERS

are ideal for those narrow, hard to fit outlets.

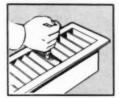
You will find hundreds of uses for these new heavy duty registers with their adjustable vanes. Ideal for Perimeter heating systems and other installations where the over-all width of the register must be kept to a minimum. An adjustable valve does the work of a quadrant damper, one man can balance a system. Narrow 3/4" margin adds to the trim appearance of these units.





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Heavy 16 gauge vanes may be adjusted to change the air pattern as desired. Factory setting gives a fan shaped air pattern. Special embossing prevents vanes from shearing off when they are adjusted.

PICTURE



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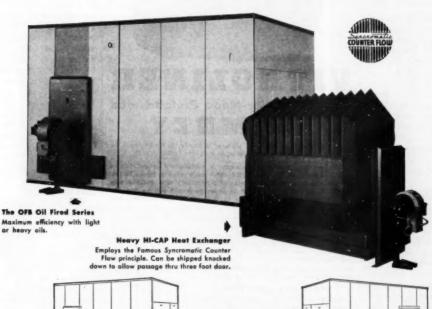
NOVEMBER 1951

Volume 88, No 11

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1931

20th YEAR

1951



Maintaining Fuel Oil Supply

The story of how an oil company's statisticians match their wits against the vagaries of the weather in order to help keep fuel oil supply and demand in balance, is told in the current issue of The Flying R e d Horse, magazine of Socony-Vacuum Oil Co., Inc.

Months before the first cool breeze of autumn blows, the company is refining and storing the heating oils that will be needed later on, the article reveals. The job must be done in advance, for consumption of fuel oils starts to outstrip production around November Therefore, millions of barrels of heating oils, about one barrel for every four barrels sold during the winter, must be on hand by that time to meet peak demands that come later.

Exhaustive studies of the weather and its effects on petroleum consumption are vital in preparing for the heating season. Socony-Vacuum statisticians seek clues for the future in how the weather has affected oil consumption in the past. Then they correct all information back to normal; that is, they adjust actual consumption figures to consumption that would have existed had the weather been normal.

One key in their weather studies is the rule of thumb that heating is required when the outside temperature falls below 65 F. If the temperature averages 64 F for a full day, that day requires, in theory, one degree of heating. The day is known as a degree day. Similarly, a temperature that averages 60 F for a full day is five degree days.



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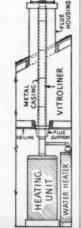
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the editor's notebook

The article describes the tremendous effect of the weather on petroleum consumption. If last year's winter had been six degrees colder than normal, like the winter of 1939-40, national consumption of heating oils would have been 38 million barrels greater than it was.

An extremely mild winter brings problems, too. A warm autumn gives no assurance of a warm winter. Therefore, to protect its customers, the oil industry must adhere to refinery schedules well into the winter, even though continued warm weather causes sharp oversupply. The winter of 1948-49, warmest of recent record, was an example: At the end of that winter the oil industry had 25 million barrels of heating oil still on hand after the lowered needs of the heating season had been met.

OAB Payments

During April, 1951, one person was drawing unemployment compensation for every 78 persons employed. One person was receiving old age or disability benefits for every 11 persons employed. One person was receiving survivors' benefits for every 25 persons employed. One person was receiving public assistance payments for every 13 persons employed.

Steel Prepares for Competition

America's appetite for steel is increasing all the time, Leslie B. Worthington, president of United States Steel Supply Co., recently told members of the Sales Executives' Club of Cleveland. "In 1940, the annual per capita consumption of finished steel in this country was 696 pounds. Currently it is





about 1034 pounds. It is estimated that in 1953 production will make available for consumption approximately 1106 pounds per capita — an amount far exceeding that which we have ever known before," he said.

Even considering the steel industry's tremendous expansion program and its present market condition, Mr. Worthington remarked, "It doesn't take much foresight to see that the day will come when steel salesmen will have to get out in the street and peddle their products."

"Because of the flush condition in our industry, there is bound to be a tendency to sit back and use a minimum of sales effort. I don't have to tell you about the serious effects which such a letdown can have on an individual or an organization. Most of us, out of our own experience, can point to concerns which failed simply because they couldn't stand prosperity."

"Those of use who are responsible for the affairs of United States Steel Supply Co. have no intention of falling into bad selling habits. On the contrary, we are doing everything possible to develop additional competitive strength. You might expect that under present conditions our sales staff would be reduced. Actually it has been increased. In addition, we have undertaken an extensive sales training program designed to keep our salesmen 'on the ball', with a sales-minded, aggressive approach in their calls," Mr. Worthington said.

Steelmen are hopeful that an "understanding" attitude of the government's defense production authorities will unsnarl





the steel supply situation. Edward L. Ryerson, chairman of Inland Steel Co., with other steel leaders, recently presented recommendations for changes in the controlled material plan for steel to Charles E. Wilson, director of the Office of Defense Mobilization, and Manly Fleischman, administrator, Defense Production Authority.

"We realize the Defense Production Administration and the National Production Authority are trying to make CMP work," Mr. Ryerson said. "Men in the steel industry feel that no control of production and distribution is needed in view of the fact that defense is taking less than 15 per cent of the steel made.

"However," he added, "industry representatives accept the fact that the government intends to continue steel controls with the understanding that they be eliminated as soon as practicable. Accordingly we have submitted our suggestions as to changes that will make CMP more workable."

The steelmen urged that government production authorities "audit" steel need requests from consuming industries. They said that requests for the final quarter of 1951 were almost twice the tonnage used quarterly in 1950 and termed the demand "totally unrealistic."

The report to Wilson and Fleischman was made by a group selected to represent the entire industry. It included Benjamin F. Fairless, president, United States Steel Corp.; Eugene G. Grace, chairman, Bethlehem Steel Corp.; John N. Marshall, chairman, Granite City Steel Co.; William H. Colvin, Jr., president, Crucible Steel Company of America; and Mr. Ryerson.

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A National Scandal

"It is a national scandal that so few voters have seen fit to participate in our national elections," Chancellor Albert C. Jacobs said at summer commencement exercises of the University of Denver.

"It is a shameful fact that non-voting in increasing; that as the number of potential voters rises the percentage of participation in elections declines."

And this is happening, Chancellor Jacobs points out, at a time "when alert, respontible and effective leadership is no desperately needed—the best our country can provide."

"Constructive improvement of government has never been more imperative," he continted.

It seems fitting that an educational leader should emphasize this serious problem which concerns every American.

Our generation in America has not had to earn the privilege of the secret ballot and free elections. Perhaps that is why so many of us treat this sacred right with indifference. The realization of how important a single vote can be might drive home the responsibility for exercising this privilege.

A single vote in the House extended the Selective Service Act in 1940. Similarly, in 1919, a single vote spelled the difference between success and failure of the woman's suffrage amendment in the House. A single vote in the Senate also saved President Johnson from impeachment. And one vote in the House upheld the election of President Hayes.

It is always certain that those who look to government for benefits will vote. If the rest of us do not exercise our fran-



Simplicity of design and construction . . . only three parts . . . is the main feature of the NEW Combustion Head, vital part on all Nu-Way Model CO Oil Burners. This NEW Combustion Head used with "cat-cracked" oils provides easier ignition and cleaner burning of oil at exceptionally high efficiencies without complicated parts. Easily adjustable, Nu-Way's Combustion Head is capable of performing as fine a job as any on the market. This Combustion Head is the result of

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Also Special Applications for Furnal

"Automatic Oil Heat Exclusively Since 1921"



chise, we can hardly expect politicians who want to continue in politics to resist the demand for more and more hand-outs.

Thus, while it is true that the American people would never vote for socialism, none-theless we may stumble into socialism by not voting. For ultimately all government benefits must be paid for in taxes and every tax increase places a new burden on—and so weakens—the productive segment of our economy and the incentive to invest in private business.

These are times when our votes do count. Our votes, or lack of voting, may well determine the heritage we pass on to American youth.

So it is up to each of us as citizens to heed the plea of Chancellor Jacobs for "alert, responsible and effective leader-ship"—by doing all we can, as individuals and through organizations, to make American elections representative of the will of the people as a whole.

Lack of Filters Causes for Vibrations

There have been a number of complaints concerning vibration and unbalancing of blower wheels in furnaces, primarily of the counter-flow type used on project jobs. At a recent meeting of the Furnace Blower Manufacturers' Association, where these complaints were discussed, it was pointed out that in most cases studied this unbalancing action occurred only in furnaces where filters were absent.

The reason for the vibrations caused by the unbalanced wheel was explained by members of the association. As the blower wheel revolves microscopic droplets of oil are thrown from



New York PRIZE WINNING DEVELOPMENT SELECTS VAN-PACKER MASON RY

Hearth-Stone, the 500 home community development erected by Mi-Home, Inc. in Yonkers, New York, has won second place in a nationwide competition conducted by the National Association of Home Builders. One look at the skyline of this prize winning development tells you a Van-Packer Tile-lined Masonry Chimney is installed in each of the 500 homes.

Big construction enterprises like Mi-Home, Inc. know Van-Packer All-Fuel Chimneys save construction time; eliminate waiting time and clean-up; conserve space; lower costs and insure best heater performance. Underwriters' Laboratories tests have proved Van-Packer to be fire-safe under all conditions. Send the coupon for complete information about Van-Packer Packaged Masonry Chimneys.

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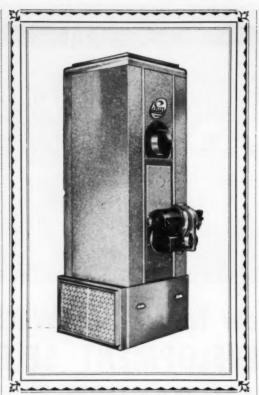


the bearings and are deposited on the vanes of the wheel. When the unfiltered air is drawn into the blower and comes in contact with the wheel, particles of dust adhere to the vanes that have picked up the light droplets of oil. Dust will continue to accumulate on the vanes to such an extent that in a short time they will have increased sufficiently in weight to throw the wheel out of balance. The unbalanced wheel then sets up a definite vibration resulting in complaints from homeowners.

In cases where warm air heating contractors have returned unbalanced blowers to the manufacturers, it has been found the only servicing necessary to restore the wheel to perfect balance was removing the accumulated dust and dirt by a thorough cleaning. To avoid this problem and the resulting complaints, members of the association recommend that filters be used on all winter air conditioning systems and that the filters be kept clean by regularly scheduled replacements.

American Ingenuity

Recently, the nation was shocked by revelation that someone in Washington neglected, during the postwar years, to build up a supply of tungsten, one of our most important alloys. Our principal sources of supply for tungsten were China and Korea. On the heels of this revelation comes the announcement that rhenium, a rare metal, has been produced in the chemical laboratory at the University of Tennessee. Rhenium compares with tungsten, as it has about the same high melting point of 3,100 C and therefore is a like-



A PICTURE OF HEATING COMFORT



Here's one masterpiece of beauty you won't see in the galleries of the "Met" but you will find thousands of them in homes of America giving the utmost in home heating comfort and satisfaction. Some call this the Standard Hi-Boy; others

simply call it a SUN Fuel Master. But whatever its name, it deserves a place in every home where economy and top performance are required.

Ask any heating contractor who handles the SUN line—he'll tell you that SUN is a picture of heating comfort.. and profit.

Ask today for the SUN franchise in your area.





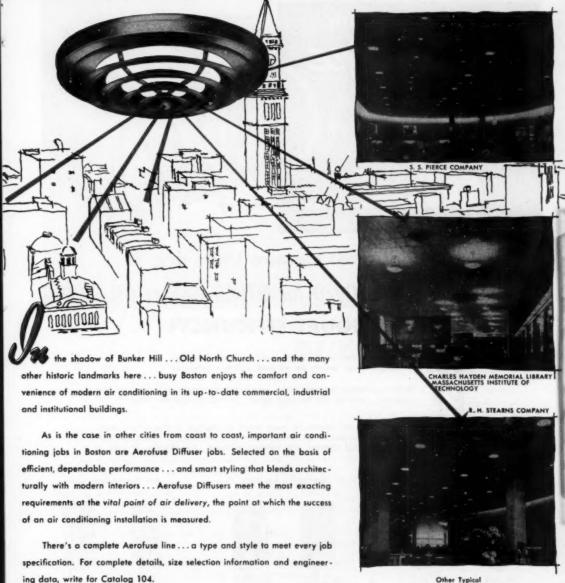
ly substitute. In some respects, it is said to be superior to tungsten, especially in the field of electronics. It has a longer life than tungsten when used at any given temperature. The university laboratory produced rhenium from molybdenum roaster flue dust and has supplied samples to 100 research laboratories. It was first produced commercially from ore in Norway in 1930. Production stopped at the beginning of World War II.

Now that rhenium has been produced in one laboratory from our own sources in this country, it seems reasonable to hope that some of our highly efficient industrial laboratories will invent and patent practical processes to produce rhenium commercially and thus go far toward alleviating our immediate need of tungsten.

Some Natural Gas Facts

Proved recoverable reserves of natural gas in the U.S. on December 31, 1950 were estimated at 185.59 trillion cu ft as compared with 180.38 trillion cu ft a year earlier, an increase of 5.21 trillion cu ft. Production of natural gas during 1950 was 6.89 trillion cu ft and new discoveries and expansion of estimates of former reserves amounted to 12.11 trillion cu ft. Despite the tremendous increase in use of natural gas for domestic and industrial fuel use, total production of natural gas during 1950 increased only 648 billion cu ft, attesting to the big decrease in flaring of natural gas in the fields and to the efficacy of conservation methods being practiced by the natural gas industry.

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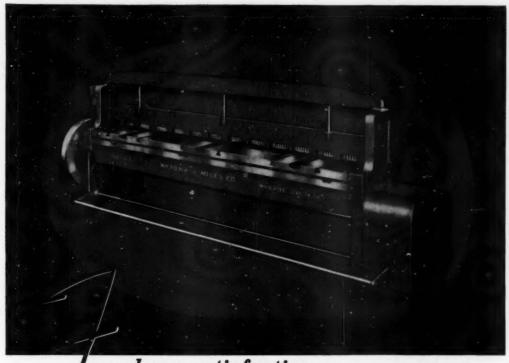
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- √ Constructed from Hi-tensile castings produced under laboratory control.
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- Adjustable, Stainless Steel scale embedded in table.
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- √ For safety, finger guard of heavy gauge slotted metal mounted on holddown.
- V Each shear tested for 24 hours before leaving factory. Shipped completely equipped and ready for capacity operation.

Wysong builds a complete line of Squaring Shears with cutting lengths up to 12 feet, and rated capacities up to 3/16 inch mild steel. See your dealer or write to the factory for full information.

Illustrated: No. 1410. Cap. 10 ft., 14 ga., mild steel; 18 ga. stainless steel.

WYSONG and MILES CO

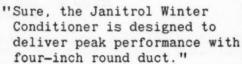


"You claim I can cut complete installation costs up to 35% and provide a better heating job?"

"Right, and the Janitrol Save-Way Air System* uses no special accessories."



"You mean, I can use standard pipe, fittings and registers that I buy from my jobber?"







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And, for many good reasons! For here is a bonafide opportunity for you to really out the costs of heating installations without sacrificing performance, instead you provide better heating, improved comfort.

It's easy to understand why the use of standard sheet metal parts, 4" diameter round duct and diffusertype registers enables you to cut down material and labor costs...but, why is Janitrol performance better?

The answer cannot be stated briefly . . . it involves

the inherent design of Janitrol equipment, control responsitivity and several other factors.

Without question, field installations prove that Janitrol equipment, installed to our recommendations, brings all the advantages of lower cost installations without the performance disadvantages that are common with other systems.

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FROM SURFACE COMBUSTION A STEEL OR CAST IRON JANITROL WINTER CONDITIONER FROM YOUR JOBBER + STANDARD 4" PIPE, BOOT PITTINGS, REGISTER BOXES, DIFFUSER TYPE REGISTERS FROM YOUR JOBBER + STANDARD 4" PIPE, BOOT PITTINGS, REGISTER BOXES, DIFFUSER TYPE REGISTERS FROM YOUR JOBBER + STANDARD 4" PIPE, BOOT PITTINGS, REGISTER BOXES, DIFFUSER TYPE REGISTERS FROM YOUR JOBBER

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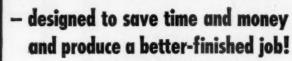
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Milcor Forced-air Pipe and Fittings are carefully designed and fabricated to make your jobs go up faster — your profit greater!

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You make extra profits when you plan your jobs for time-saving Milcor Forced-air Fittings.

Write for your copy of new Catalog 404, illustrating the complete line,

INLAND STEEL PRODUCTS COMPANY

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The scrap shortage hurts you ship your scrap today!



News Round-Up

July Heating Shipments

DURING THE MONTH OF JULY there was a slight decline from shipments of the previous month but the volume continued far below 1950's record shipments. There were 55,045 warm air furnaces shipped in July 1951 compared to 102,189 units in July 1950. Total shipments for the first seven months of 1951 were 455,922 as against 483,340 in 1950, according to the Department of Commerce.

Analysis of shipments by types of fuel shows: coal fired, 9,762 units or 17 per cent; oil fired, 21,783 or 39 per cent; and gas fired, 23,500 or 44 per cent. Automatic heat accounted for 83 per cent of shipments and forced air furnaces made up 77 per cent of the total.

There were 44,570 oil burners shipped during the month of July, including all types. The total for July 1950 was 98,656 units.

Of the July 1951 shipments 41,812 were residential oil burners.

Oil Heat Exposition

DATES HAVE BEEN SET for the 20th National Oil Heat Exposition to be sponsored by the Oil-Heat Institute. This event will be held April 14-18, 1952 at the Commercial Museum exposition hall, Philadelphia, Pa.

The 1952 exposition will be an important event since there will be no show in 1953. The OHI has reached an agreement with the American Society of Heating and Ventilating Engineers whereby the groups will alternate years for sponsoring expositions.

September Housing Starts

HOMEBUILDERS THROUGHOUT the nation started 91,000 new permanent nonfarm dwelling units in September, an increase of 7 per cent over the August total of 85,000, according to the Bureau of Labor Statistics.

For the first nine months of 1951, housing activity totaled 852,000 new units, well above 1948 and 1949 levels but 23 per cent below the 1,212,600 for 1950. Private builders' housing volume during the third quarter was only 8 per cent below the second quarter, in spite of credit regulations.

Aluminum Situation Improves

ACCORDING TO the Aluminum Company of America heavy rains in the Pacific Northwest have reduced aluminum production losses there by 73 per cent. Water levels at hydro-electric sites have been restored to the point where Alcoa estimates its drought-caused aluminum production losses will be about 2.2 million pounds this year instead of the 8 million pounds originally anticipated. In a report of defense agencies, Alcoa estimated its 1951 production at 853.4 million pounds.

Stoker Sales Rise

FACTORY SALES of mechanical stokers for the month of August 1951 doubled sales for July 1951. August shipments totaled 3,025 units of all sizes and types compared with 1,573 in July. Sales for the first eight months of 1951 totaled 13,914 units compared to 13,746 in the corresponding period a year ago.

Defense Construction Plans

THE LARGEST PEACETIME military construction program in the history of this country will begin shortly, following authorization by Congress and approval by the President of a \$5 billion appropriation for the Army, Navy, and Air Force.

The Defense Department has drawn up a list of the construction projects in the United States. The list includes troop housing, family quarters, officers housing, hospitals and other facilities. Information about the list can be obtained at local field offices of the Defense Department.

Authority Defined

THE PETROLEUM ADMINSTRATION for Defense has clarified its authority to require, forbid, and otherwise provide for the delivery of petroleum or gas in PAD Regulation No. 1.

Under the terms of the regulation PAD can issue directives to require adjustments in the distribution of petroleum, petroleum products, gas and other material under the jurisdiction of PAD to promote the defense effort. The first directives issued under the regulation will be designed to insure adequate supplies of fuel for the Navy during the fourth quarter of 1951.

Forced Warm Air Conferences

PLANS ARE NOW WELL under way for five Forced Warm Air Conferences in the spring of 1952, Oklahoma A. & M. being the newest addition to the group. These conferences are sponsored by the National Warm Air Heating and Air Conditioning Association.



News Round-Up

Dates of the various 1952 conferences are as follows: Oklahoma A. & M., March 17 to 20 Iowa State College, March 25 to 28 Michigan State College, March 31 to April 3 Purdue University, April 9 to 12 University of Wisconsin, April 15 to 18

Dean Lorin Miller, chairman of the Installation Codes, Technical Information Committee, points out that these conferences are not lecture courses. Over 70 per cent of the total conference time is actually consumed in small group classes or related discussions, with the attending individuals following step by step the problem they select.

Each school will have an elementary class which will use a conventional bungalow with basement and expansion room in the attic. The heat loss will be computed

TEN YEAR INCREASE IN HOME USE OF GAS (UTILITY GAS) 22,146 16,904 THOUSANDS OF RESIDENTIAL CUSTOMERS 625 ANNUAL SALES PER RESIDENTIAL CUSTOMER (IN THERMS) 12 13 14 15 16 17 18 19 1950 SOURCE: AMERICAN GAS ASSOCIATION

D URING the past decade, the gas utility industry has added an average of more than 500,000 new residential customers per year. Significantly, the number of domestic gas customers increased more than 35 per cent from 1941 to 1950 inclusive, while total family units in the United States advanced only 22 per cent, according to the Census of Housing. During the same 10-year period, gas use per residential customer rose more than 80 per cent, reflecting the expanded availability of natural gas, greater use of gas for house heating and for such newer uses as air conditioning, clothes drying and incineration.

by the students. Both gravity and a forced warm air plant will be laid out, and conversion from gravity to forced air discussed. This course will be primarily for newer men in the industry or for those specializing in this type of work.

A second problem will be the basementless type house. Again, heat loss will be computed by the students. The heating of this home will be laid out and discussed, using several different methods: perimeter heating, slab and crawl space loop, and radial systems.

The third problem will be a large ranch type home. The heat loss will be given except for actual infiltration. This will be figured by the students. Then the heating layout will be made, including sizing heater, blower, ducts, registers, etc.

The other problem offered will be a four room school. The heat loss will again be given, but infiltration and ventilation will be computed by the students. A complete layout will then be made and controls selected for the building.

Students attending these conferences will elect the course they wish to attend. Since each problem will consume all the class time available, it will be impossible to elect more than one problem.

Dean Miller recommends that all dealers and jobbers give serious consideration to attending one or more conferences. The problems will be identical at all schools, so if more than one problem is desired by an individual, he can attend a second or even third school. The dates of the school make it possible to take all four problems.

The cost of the conferences will be \$20.00 registration fee, plus board and room.

Obituary

Walter E. Boisinet, Sr.

WALTER E. VOISINET, SR., 52, a leading figure in the heating and ventilating trade in western New York for many years, died Oct. 1st in Buffalo after an extended illness.

Born in Buffalo, Mr. Voisinet was graduated from Cornell in 1920. A manufacturers' representative, he had offices at 250 Delaware Ave., Buffalo. He was a past president of the Western New York Chapter of the American Society of Heating & Ventilating Engineers, and a past president of the Western New York Chapter of the Indoor Climate Institute.

During World War II, Mr. Voisinet was manager of the research laboratory of the Curtiss-Wright Corp. in Buffalo. He is survived by his wife, two sons and a daughter.

NEW! Vertical Steel — Oil-Fired

Winter Air Conditioner by RICHMOND

Here's a new and wanted addition to Richmond's line of winter air conditioners...giving you a still wider selection of quality heating units.

Here's a unit built to fit easily into homes where space is tight . . . ideal for restricted space use in utility closet installations.

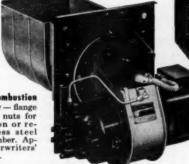
Here's a competitively priced, thrifty-to-run unit that more than meets today's demand for low-cost heating ... without sacrificing quality.

Here's the new SU-P in its handsome jacket... made of sturdy steel, finished in light green Hammertone baked enamel. Note the heat exchanger... made of 12 gauge steel... welded for durability and efficiency. Use the handy coupon to get full information—fast.

Remember—when quality and economy count, count on Richmond.



Oil Burner and Combustion Chamber Assembly — flange mounted with 4 nuts for easy installation or removal. Stainless steel combustion chamber. Approved by Underwriters' Laboratories, Inc.



Type SU-P
Steel Oil-Fired Winter Air
Conditioner. Two sizes—
85,000 BTU and 106,000
BTU output at Bonnet.



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Please send the information and literature
on Richmond heating equipment and plumbing fatures.



FOR WARM AIR the Series 520 liquid expansion combination fan and limit control can be mounted anywhere in any position. Features "summer fan on" position on the dial...full-range accuracy over entire range ... easy-to-read calibrated dial with both cutin and cut-out points...and many other desirable features.



FOR HOT WATER applications the Series 442 safety limit or operating immersion control features "trigger-quick" response... close differential... ease of adjustment... easy-to-read calibrated dial... and other exclusives that set a new "yardstick" for dependable, fast-acting operation. You must try it to believe its amazing performance.

for todays heating system...

CONTROLS with FAST RESPONSE

That's right! In job after job...both warm air and hot water... PENN heating controls give faster response, greater accuracy, more dependability and are easier to install.

One of the reasons for this superiority is PENN's patented, self-compensated diaphragm which eliminates the effect of ambient temperatures. Result? Uniform, positive, more accurate control action plus definite mounting advantages. Another reason is the liquid-filled power element which has more sensitivity and proven trouble-free performance year after year.

And there are many other reasons which make PENN heating controls your best buy. Get all the facts...you'll be dollars ahead. Ask your manufacturer, wholesaler or write Penn Electric Switch Co., Goshen, Indiana. Export Division: 13 E. 40th Street, New York 16, N. Y., U. S. A. In Canada: Penn Controls Limited, Toronto, Ontario.

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AUTOMATIC CONTROLS

FOR HEATING, REFRIGERATION, AIR CONDITIONING, PUMPS, AIR COMPRESSORS, ENGINES, GAS RANGES

"Springfield Jobbers and Dealers Call Viking's New "777" BLOWER

the PINT SIZE PACKAGE that does a FULL SIZE JOB!"

Says Jack Green, Energetic Viking Representative

"Dealers in the Springfield, Mass., area like the fact that Viking's new, small 7" blower delivers up to 700 cubic ft. of air per minute and converts warm-air furnaces of up to 50,000 btu rating to winter-air conditioning. They tell me that this means a huge new source of business where regular size blower packages are too big and too high priced."



"My Springfield dealers are Always on the Alert for New Sources of Business and Added Profits," says ROY J. TREPANIER. Gray Supply Company,

20 Franklin St., Springfield, Mass.

"They are always looking for new and better products in the heating field. Their enthusiastic support, such as their response to Viking's new '777' Blower Package, isn't easily wan. For their choice of products to



handle, they bank on their long experience in Springfield's tough heating market . . . and so do 11 That's why we are pushing Viking's latest addition to their complete blower line."

READ WHAT THE 7" VIKING BLOWER MEANS TO SPRINGFIELD DEALERS

ABBOTT W. LAWRENCE, JR., Lawrence Heating & Supply Co. 40 Berkshire Ave., Springfield, Mass.

"In my area, there have been a great number of 4 and 5 room "price" houses built since World War II. Viking's new, compact, low priced blower package has made these small home owners winter-air-conditioning prospects for me."



D. W. ROGERS, Rogers Home Appliances, 1080 State St., Springfield, Mass.

"I like the simple direct drive on the new '777' that eliminates all belts and pulleys. I also like the fact that just the turn of the rheostat knob 'dials' a selection of seven speeds to meet any



FRED WIEDERSHEIM

25 Tracy \$1., Springfield, Mass.
"One of the '777' features that I like best is the great number of consumer appeals: compact, good-looking cabinet; full size (400 square inch) filter; easy speed adjustment; Viking quality materials throughout; and the low price that makes winter-air-conditioning available to every homeowner. With features like these, selling is lots easier."



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UNITED STATES STEEL



Where Is The Steel?

THE whodunit of Washington is the mystery of steel. Members of Congress on both sides of the Capitol are genuinely puzzled, and somewhat bewildered. They are having real difficulty in unravelling the riddle of the surplus they are told exists, the whereabouts of which no one seems to know anything. Their mystification is further fogged by the different answers they get from Mobilizer Wilson and DP Administrator Fleischmann, Wilson tells them there is more steel than is reported by Fleischmann, Wilson simply says he knows there will be one million tons more in the first quarter of 1952 than even the steel producers have in their picture. Then he qualifies this by saying he will have "the steel people breathing down my neck."

Just exactly how the impatient Wilson would describe the action of his subordinate, Fleischmann, at the recent four-committee hearing of Congress has not yet been revealed. After hearing Wilson's optimistic prophecy for the first quarter next year, Fleischmann in the presence of his boss scaled down the estimate by a substantial number of tons and looked the Senators and Representatives straight in the eyes and told them that his estimate is realistic.

This dark-haired, dark-eyed young man from Buffalo is the first man this correspondent has ever heard who could tell the stormy Wilson he dreams dreams and get away with it. Wilson is proud that he once ran with the gangs in New York's Hell Kitchen, and usually acts the part. Fleischmann is suave, smooth, rather casual, and has a swift wit which is often razor sharp. Those of us who have watched Fleischmann since he first returned to Washington months ago have seen him change from a very friendly and attractive young man to a person who is obviously tired and apparently rather disgusted with the experience he is having. It would not be surpising if he were to bow out if he had a good face-saving opportunity to do so. It can't be too pleasant to do business with Wilson at one end of the rainbow and with Truman and his White House company at the other end.

Aside from patriotism, why anybody would voluntarily expose himself under present circumstances to a spotlighted career in Washington is somewhat of a mystery itself. Apparently, when Fleischmann isn't holding press conferences, attending seances with Wilson, or making speeches here and elsewhere to irritable taxpayers, he is down on the hill justifying what his subordinates have done or will do to a committee of Senators or Representatives, groups of gentlemen-and sometimes ladies-who grab every opportunity to bask in the political limelight where they can put the other fellow in the wrong. If a member of Congress can perform the acrobatic feat of jumping down the throat of

a government official—as phrased by an official—the performance usually will bring him publicity in the newspapers and on the air.

The other day four committees of Congress, two small business committees and two banking and currency committees of the Senate and House, jointly held a hearing to pursue the mystery of steel. It was here that Fleischmann scaled down the Wilson estimate by 800,000 tons. And it was here that Wilson told members of Congress that the direct defense program in the first three months of next year would absorb at least 500,000 tons more of steel than it took the current quarter.

Now the Pinch!

It was Wilson, with a kind of dare-you smirk, who told them that the joy ride of American industry has come to an end. From this point on everything not in defense would be badly pinched. It was Wilson who told the members that industry would suffer loss of profits and that workers would have to take unemployment. Fleischmann brushed aside the suggestion that lack of metal would be the death warrant of some businesses, and then he told them that the makers of at least 200 items in common use would not get enough materials to carry on their businesses. It was at this point that Wilson added that defense would take 81,000,000 pounds more of copper, and 80,000,000 pounds more of





Washington Letter

aluminum, at the same time stressing that both copper and aluminum were bound to become far more scarce in the months ahead. Officially the majority of non-defense producers will get only 15 per cent of the quantity of metals they procured in normal times. Actually, Washington talk is that they will be doing well if they manage to scrape together 7 to 10 per cent.

It was at this stage of the show—and it is chiefly a show they hold when they have these public hearings—that Fleischmann remarked that automobile manufacturers were scheduled to get enough steel, copper, and aluminum to produce between 950,000 and 1,000,000 cars during the months of January, February, and March. Total production is expected to be somewhere between 1,000,000 and 1,500,000, because they have considerable metal in their possession which Fleischmann called their "legal inventory."

Preference?

This naturally provoked the question how the automobile people got away with it. The members had assumed that any one having more metal than they could use during a given quarter either had to apply it to the next quarters allocation or turn it over to the general stockpile of metal available to all participants in the program. The explanation was that the automobile industry was not put under allocation until the fourth quarter and that the metal it had hitherto possessed had nothing to do with its program when it came under allocation control. There was naturally much muttering among members of Congress. Those who represented the farm machinery, implement and construction industries were not satisfied that they had been as well treated as the automobile industry. The high production of motor vehicles has continued to be one aspect of the mystery of steel that still provokes persistent questioning among the people on the hill.

First Quarter

Fleischmann reported the steel industry expected to supply 21,125,-000 tons of steel during the first quarter of 1952. Only 50,000 tons more structural steel was authorized than was available in the fourth quarter. High-alloy steel was expected to dwindle, while carbon steel is expected to increase. It is interesting to note that the irreducible stated requirements of all claimant agencies, including the defense agencies and necessary reserves for maintenance, repair and operating purposes, totalled 33,000,000 tons of steel, or more than 165 per cent of the supply available for the first quarter. The CMP tickets to be issued for the first quarter of 1952 will aggregate 112 per cent of the estimated supply. They call the 12 per cent over-allotment the amount theoretically set aside to take care of attrition. They use the word attrition to denote the tickets which for one reason or another are not cashed, probably sometimes because there has been duplication, or errors, or adjustments or changes in specifications and designs.

If you are used to interpreting government industrial data by the standard industrial classifications used by the Bureau of the Budget you will be confused by the classifications as listed by the NPA-DPA. This correspondent tried to translate the budget terms into NPA-DPA terminology but found that NPA people could not understand the budget language. Off the record, they will tell you that their information is given them by higher authority, and that higher authority is known to have a great deal of detailed information which is not made available at the lower levels. There is little doubt the glittering dust is designed to mask some details. There is probably some need for this because confusion almost inevitably would stem from the huge volume of data and information that swamped NPA-DPA in the opening phasess of the emergency. And this situation undoubtedly caused higher authority to overestimate and underestimate and to find much duplication and overlapping. All of this has brought upon their heads bitter criticism from the Congress and from the people in the industry who are unavoidably the victims of what happened. You cannot help but feel sympathy for the members of Fleischmann's staff when you hear them try to explain the operations of NPA and DPA and CMP to a critical committee of Congress sitting like judges on an impressive podium.

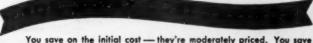
Here are the figures of the allotments of steel, copper, and aluminum, as announced by Fleischmann before that four-pronged Congressional committee: Building materials, 1,113,100 tons steel; 51,850,000 pounds copper; 45,300,000 pounds aluminum. Construction machinery, 487,654 tons steel; 7,220,000 pounds copper; 2,400,000 pounds aluminum.

(To page 29)



FOR Detter OVERHEAD AIR CONDITIONING-

The H&C Ceiling Diffuser has been painstakingly engineered to provide the most efficient and economical means of distributing the airflow in overhead forced air heating or cooling, and at the same time provide the maximum of pleasing, harmonious appearance.



on every job involving residential "package heating", for the exceptionally low resistance of this Diffuser makes changing the blower unnecessary. You save on installation time on every job for the removable flange makes installation so simple and easy.

SEALED TO PREVENT STREAKING . . . 5 POPULAR SIZES in baked-on Prime Coat, an excellent neutral finish. See your H&C Jobber or our current catalog, No. 51 for details.

No. 19 DAMPER KIT: Contains all necessary parts for installing a round or rectangular damper in the leader pipe ahead of the Ceiling Diffuser—thus providing an economical meens of controlling the air flow to the outlet. Damper can be closed or opened from below by a simple adjustment of the chain at the center of the outlet face.

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PRODUCT OF THE WORLD'S LARGEST and MOST PROGRESSIVE PRODUCERS OF REGISTERS and GRILLES



My New House Business Is DownYet My Profits Are Up!

Like a lot of heating contractors, I was trying hard to figure what to do about the cut in new house starts—and the cut in my profits. And, believe it or not, I got the answer at a neighbor's!

This particular evening, we were talking about comfort when our hostess said, "It seems like our house is *always* too hot or too cold." I looked at the old-fashioned thermostat on the wall. "All you need," I said, "is a new Honeywell clock thermostat."

"One of those I see advertised so much?" our hostess asked.

"Right," I said. And then I explained how it would not only give them comfortable, even warmth, but would automatically lower the temperature at night and raise it in the morning.

At that point I got an order—and the answer to my big problem. If these people were conscious of the need for better heating, it would be easy to sell dozens of other families in town up-to-date heating equipment and modern automatic heating controls.

I didn't waste any more time getting my modernization program going. I ran local ads on improved heating equipment. Naturally I featured the better Honeywell controls, tying in with Honeywell's wonderful advertising. And I followed through with a phone and door-to-door campaign.

And, brother, it's really paying off!

Now, thanks to my neighbors—and thanks to Honeywell—my modernization business has more than filled the gap left by the cut in new construction.

Honeywell



First in Controls

Kruckman -

For the expansion of its own industrial facilities the steel and iron industry was allocated 243,216 tons steel; 17,000 pounds copper; and no aluminum. To improve the delivery of copper the industry was allocated 43,250 tons steel; 3,300,000 pounds copper; and 2,260,000 pounds aluminum. For expansion of aluminum and magnesium they gave the industry 12,850 tons steel; no copper; and 100,000 pounds aluminum.

It is interesting to find that an item listed as General Components, which no one could quite clearly identify, was credited with 1,089,500 tons steel; 172,075,000 pounds copper; and 18,000,000 pounds aluminum. Also, materials for the production of containers and packaging were supplied in the amount of 1,682,250 tons steel; 258,000 pounds copper; and 19,000,000 pounds aluminum. General industrial equipment, which is more or less identifiable, got 500,436 tons steel; 41,905,000 pounds copper; and 17,000,000 pounds aluminum. Canada was allocated 415,000 tons steel; 4,600,000 pounds copper; and 2,150,000 pounds aluminum.

A Catch-All

The Facilities Bureau is a part of NPA which embraces the needs of schools, churches, communities, everything that might be defined as a facility-and many things that would sound very strange as a facility except to a government official. They gave the Facilities Bureau 712,700 tons steel; 28,886,000 pounds copper; and 7,000,000 pounds aluminum. For the production of engines and turbines they set aside 580,000 tons steel; 29,930,000 pounds copper; and 3,900,000 pounds aluminum. Civilian aircraft industry was given 12,400 tons steel; 1,708,000 pounds copper; and 6,500,000 pounds aluminum. The manufacturers of machinery and implements for the farms were given 527,100 tons steel; 7,800,000 pounds copper; and 6,500,000 pounds aluminum. Electrical equipment, which was separated from civilian electronics, was put down for 586,710 tons steel; 147,-169,000 pounds copper; and 24,250,000 pounds aluminum. Electronics, covering radio, television, and some civilian activities which are helpful to defense, are listed for 75,385, tons steel; 33,760,000 pounds copper; and 18,000,000 pounds aluminum. Telegraph facilities, and other communications industries, were given an allocation of 39,550 tons steel; 47,230,000 pounds copper; and 2,500,000 pounds aluminum. The manufacturers of chemicals were given only 314 tons steel; 1,384,000 pounds copper; and 5,090,000 pounds aluminum.

The Lion's Share

The greatest allocation of steel goes to the automotive industry. It is listed under the words: Motor Vehicles. It is given 3,054,131 tons of steel; 128,055,000 pounds copper; and 77,710,000 pounds aluminum. Next comes the Department of Defense which is listed for 2,408,700 tons steel; 297,000,000 pounds copper; 250,000,000 pounds aluminum. To this should be added the 35,200

Want To Get Your Share Of The Big Modernization Market?

Then you'll want to promote up-to-date Honeywell controls like these!

The Honeywell Chronotherms are the most sensitive, most accurate thermostats ever built! They automatically lower the temperature at night to save fuel; automatically raise it in the morning so your customers get up in a nice warm house. And that offers you a



mighty important modernization opportunity. Because a recent survey shows that 3 out of 4 people with thermostats raise and lower temperature settings every day—by hand!



The New Honeywell Electronic Moduflow "package," with its outdoor and indoor thermostats, was designed to give your customers the finest kind of comfort—even in the most changeable weather. The system compensates for temperature changes outdoors, load shifts indoors and structural heat loss. Electronic elements such as the relay amplifier and the electronic Chronotherm give precision control, are up to 100 times more effective than mechanical controls. This system is ideal for the complete modernization job.

The Time-O-Stot's "Day-Nite" feature makes possible either lowered temperature or complete shut-off at night with automatic morning pickup. Positive shut-off manual switch allows the home owner to turn off the heating plant—without making a trip to the basement. Both features are excellent modernization sales points.



For illustrated literature explaining the above products in detail, write today to Minneapolis-Honeywell, Dept. AA-11-195, Minneapolis 8, Minnesota.





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tons steel given the army, as well as 1,525,000 pounds copper, and 100,000 pounds aluminum. The other large allocation of steel goes to the Petroleum Administration for Defense, 1,708,500 tons steel, 8,300,00 pounds copper, and 850,000 pounds aluminum.

Export Steel

It is interesting to know that Secretary Sawyer, of the Department of Commerce, obtains for export through the Office of International Trade, together with the Economic Cooperation Administration, 652,500 tons steel for shipment abroad to unidentified countries, and 10,-435,000 pounds copper, as well as 850,000 pounds aluminum. Other agencies, including the Department of Agriculture, Atomic Energy Commission, Civil Aeronautics Administration, Electric Defense Power, Defense Minerals Administration, Defense Fuels Administration, Defense Transportation Administration, Federal Civil Defense Administration, Federal Security Administration, General Services Administration, Housing and Home Finance Agency, Department of Interior, Maritime Commission, Bureau of Public Roads, and the Veterans Administration, collectively take approximately 5,000,-000 tons steel, and a huge volume of the rare copper and aluminum. Railroad equipment comes in for 1.640,750 tons steel, 86,360,000 pounds copper, and 6,000,000 pounds aluminum. Producers of leather ware, lumber and wood products, metal working machinery, mining

machinery, motion picture products, ordnance and ships, printing and publishing products, pulp and paper and paperboard, rubber, scientific and technical equipment, service equipment, textiles, tin and lead and zinc products, collectively are listed for over 800,000 tons steel. Finally, for MRO rating, self-certification, field cases, and small users, there are set aside 2,334,426 tons of steel, 105,159,000 pounds copper, and 43,833,000 pounds aluminum.

But the mystery of steel bothers Washington. It has heard that the last war, when peace-time industry was resumed, was responsible for 26,000,000 tons which had not been available before the war, and which did not figure in any post-war distribution. The metal detectives on the hill are trying to find out where that steel is going now. And no one seems to be quite satisfied with the allocation figures as they have been given for the first quarter of 1952. Of course, primarily, almost everybody except the automobile people, are dissatisfied with the quantity of steel allocated to motor vehicles.

You find most legislators think, reasonably or unreasonably, that an unexplained and huge tonnage reaches warehouses, and other storage facilities, where it drifts into the possession of those curious operators called brokers. They are willing to concede that there are wholly legitimate brokers; but in the back of their heads they carry the thought that probably nine out of every ten brokers are the persons who have no offices and no storage facilities but who operate in a daisy

(To page 146)







YOU need this LOW-COST oil Burner in your Line-up to Capture YOUR share of this Business

Designed specifically for the Low-Cost Small Home Market

Automatic heating for small homes!-That's the key to sales NOW! Builders, developers, faced with the problem of holding down costs on small homes are demanding the best possible heating unit at the lowest cost. AND THAT'S THE EXCLUSIVE KRESNO-STAMM *P.A.G. "BALL FLAME" OIL BURNER!-the oil burner unit engineered specifically for top performance in fractional gallon firing rates up to one gallon.

Kresno-Stamm promotion is reaching large-scale builders across the country. YOUR customers are being pre-sold on "Ball Flame." Follow up fast and close the business!

For larger homes—the Kresno-Stamm POW-R-MATIC Gun Type Oil Burner is a leader!



HERE'S WHAT MAKES THE *P.A.G. "BALL FLAME" the hottest thing in

- A compact unit, complete with all equipment firing assembly; auto-matic safety float oil valve; mechan-ical forcad draft blower unit with slow-speed motor mounted on rubber for silent operation; specially engineered heat-resistant flame spreader.
- 2. Exclusively designed for inexpensive furnace installation. Does not require refactory combustion chamber. Does not require stack relay. Easily adapted and installed in all types of furnaces—Hi Boy, Gravity, Counter-flow, Utility, and Floor Furnace. Easily built to manufacturers' speci-fications for production line assem-

1/3 fuel saving below 1 gallon con-sumption as compared to gun type. Trouble-free. No costly service calls. Replacements of parts are few and

CHEAPER TO BUY—TO INSTALL! Thei's why more and more builders and developers are furning to "Ball Flames" automatic all burners for small homes. On a 100 until developers, type years packet 100 unit development, you can pecket as much as \$10,000 on the cost of the

They all depend on ANEMOSTAT FOR DRAFTLESS AIR DIFFUSION

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Many of these installations represented unique air diffusion problems which were successfully solved by Anemostat. This experience can be a valuable and practical aid to you. Your local Anemostat Sales Engineer is backed by the most experienced engineering department in the air diffusion industry. Call him.

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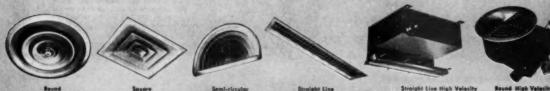
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REPRESENTATIVES IN PRINCIPAL CITIES

"No air conditioning system is better than its air distribution"

ALUMINUM COMPANY OF AMERICA AMERICAN CAR AND FOUNDRY COMPANY AMERICAN CYANAMID COMPANY B A O BAILBOAD BETWEENEM STEEL COMPANY ROFING AIRCRAFT COMPANY SURDINE'S DEPARTMENT STORE CHASE NATIONAL BANK CHRYSLER CORPORATION COLUMBIA BEOADCASTING COMPANY CONSOLIDATED VULTEE AIRCRAFT CORPORATION CONTAINER CORPORATION OF AMERICA DRAVO CORPORATION EASTMAN KODAK COMPANY E. I. DU PONT DE NEMOURS & CO. FORD MOTOR COMPANY GENERAL ELECTRIC COMPANY GEORGIA SCHOOL OF TECHNOLOGY HARVARD UNIVERSITY HORMEL COMPANY HOWARD JOHNSON'S RESTAURANTS INTERNATIONAL BUSINESS MACHINES CORPORATION INTERNATIONAL HARVESTER CO. JANTZEN KNITTING MILLS JOHNSON & JOHNSON LIGGETT & MYERS TORACCO COMPANY LOSD & TAYLOR MARS INC MERCHANDISE MARY METEOPOLITAN LIFE INSURANCE CO. MONSANTO CHEMICAL COMPANY NATIONAL BROADCASTING COMPANY N. Y. CENTRAL'S TWENTIETH CENTURY LIMITED NEW YORK TELEPHONE CO. PACIFIC TELEPHONE & TELEGRAPH CO. PENNSYLVANIA BAILEOAD PENTAGON BUILDING S. S. QUEEN MARY RICH'S DEPARTMENT STORE ROCKEPELLER CENTER SANTA PE BASEROAD SEARS-ROEBUCK & COMPANY STANDARD OIL COMPANY SWIFT & COMPANY U. S. ATOMIC ENERGY COMMISSION U. S. VETERANS HOSPITALS UNITED NATIONS BUILDING WESTINGHOUSE ELECTRIC COMPANY

- ONLY ANEMOSTAT OFFERS ALL THESE TYPES OF AIR DIFFUSERS TO FILL EVERY ARCHITECTURAL AND ENGINEERING NIED



WOOLWORTH STORES

AND A THOUSAND OTHERS OF SIMILAR IMPORTANCE

Fuel Problems?
Sales Problems?
They Vanish with

MONCRIEF



GAS? OIL? YOU DECIDE!

THE MONCRIEF AIR CONDITIONING UNIT



As a gas-fired unit



As an ell-fired unit.

BECAUSE! MONCRIEF UNITS are DESIGNED and APPROVED for EITHER GAS or OIL FIRING!

Moncrief Basement Air Conditioning Units — Gravity Furnaces — Utility Units and Counterflow Units are so soundly engineered and soundly designed that they have met all the exacting requirements to burn either gas or oil with equal efficiency and equally satisfactory results.

-With Moncrief you can install the unit NOW!
- Install the type of burner later
- ... Convert from one fuel to the other at ANY time in the future!

THE HENRY FURNACE COMPANY . Medina, Ohio

HEATING AND AIR CONDITIONING UNITS



E FURNACE DIRECTOR AND BUTTINGS



Life-saver for Users of Nickel-Bearing Steels

If you are among those handicapped by government restrictions on nickel-bearing 18-8 stainless, large Ryerson stocks of straight chrome stainless may prove to be a life-saver. For example, many who formerly used type 302 sheets to meet mild corrosive action are finding a practical alternate in type 430. And this 17% chrome stainless is on hand now —ready for immediate delivery from your nearby Ryerson plant.

You can order type 430 sheets from Ryerson in all gauges from 10 to 26, in No. 2B or No. 4 finish—and in almost any quantity. You can also get quick

shipment of these additional straight-chrome products: type 405 sheets—types 410 and 430 plates—and type 416 bars. It all adds up to the nation's largest stock of straight-chrome stainless. All with no restrictions on end use, but all time-tested Allegheny stainless of uniform high quality and definitely established characteristics.

In this stock, you may well find a steel that will enable you to maintain satisfactory quality in your product until nickel-bearing steels are again available. So now for stainless, we urge you to consider the versatile chromium stainless steels in Ryerson stock.



WRITE FOR HELPFUL DATA -- On Type 430 and Other Chrome Stainless

To help you convert to chrome stainless, we shall be glad to send an authoritative bulletin on the mechanical properties, corrosion resistance, weldability, etc., of these steels as compared with 18-8 stainless. Write for your copy. And remember that the advice of Ryerson stainless specialists is always yours for the asking. We suggest you discuss your chrome stainless problems with us.

National Warehouse Distributor of Allegheny Stainless in All Types, Shapes and Sizes

RYERSON STEEL

JOSEPH T. RYERSON & SON, INC. PLANTS AT: NEW YORK • BOSTON • PHILADELPHIA . • CINCINNATI • CLEVELAND

DETROIT • PITTSBURGH • BUFFALO • CHICAGO • MILWAUKEE • ST. LOUIS • LOS ANGELES • SAN FRANCISCO

ARTISAN

Natural Gas And Warm Air Heat

INFLATION has finally caught up with natural gas. In the past 10 years while commodity prices have increased 85 per cent gas rates have risen negligibly. In the industry there is agreement that rates are too low, but a controversy exists over how much the increase shall be and how it shall be distributed over domestic and industrial users.

There is little doubt that the extremely favorable price of natural gas for space heating has contributed materially to its expanding acceptance during the past 15 years. Many contractors in northern areas will recall when gas was first offered for residential heating it was accepted as a premium fuel. In some communities it first was manufactured gas, then manufactured mixed with natural, and finally straight natural. During the years the price remained constant while other fuel prices rose. The bargain was always getting better. Homeowners went all out for gas heat. New distribution capacity was absorbed as quickly as a sponge soaks up water.

But now a serious problem has arisen. Costs of doing business have risen so rapidly that pipeline companies and public utilities are reluctant to further expand gas capacity while gas rates remain low. It is obvious that someone is going to have to pay more for natural gas but who is it going to be?

Three spokesmen for branches of the natural gas industry recently touched on this topic. Their common objective is to obtain more revenue, but they advocate different approaches.

James F. Oates, Jr., chairman of People's Gas Light and Coke Co., Chicago utility, urged higher rates for space heating as one solution for the present tight supply situation. He said that natural gas is being forced to market at a cost lower than its economic worth, on the theory that its service is a monopoly, whereas it is merely a fuel competing with coal and oil. Discussing complications caused by a large space heating load with its winter peaks and summer valleys, Mr. Oates said: "The gas utility faces a serious dilemma, either it fails to serve the public and is nationalized or it provides service uneconomically and becomes bankrupt."

A similar attitude was expressed by C. Pratt Rather, assistant deputy administrator of the Petroleum Administration for Defense, in a speech at Oklahoma City. He said that because natural gas is so cheap, compared with other fuels, an excessive demand has developed.

It was his opinion that the public should be warned that it can destroy the natural gas industry and badly hurt itself in the process, if it continues to insist on cheap natural gas. He added:

"Gas simply cannot supply the entire fuel market of this country. The present cheap price has a tendency to make the public want it to do just that."

Another point of view on the problem of gas rate structure was voiced by Frederic O. Hess, president of the Gas Appliance Manufacturers Association. He urged state utility commissions to provide for an upward adjustment in rates for those factories to which a firm, year round supply of gas is essential, while maintaining present rates to other industrial users. Rates for household consumers would remain the same, he said.

Recent advances in gas equipment for industry have resulted in many important processes for which it is not possible to substitute any other fuel. Some of these applications are in defense industries and vital to the nation. Mr. Hess indicated that a new rate structure should be set up for these "must" industries. He said:

"Without in any way affecting the price of gas to the domestic consumer, such a rate structure would provide the utility with badly-needed revenue which could be used for construction of additional natural gas storage or gas manufacturing facilities."

This weakness in the rate structure of the natural gas industry has implications for the warm air heating contractor. In the past few years when a utility issued a number of permits for gas heating, it created that many gilt edged prospects for conversion burners or replacement furnaces. These were prospects anxious for service and if they had not been sought out by a heating contractor, they began to do the contacting themselves.

If the natural gas supply picture is to remain static due to low gas rates, there will be an inevitable dampening effect on the replacement market. This in turn will mean harder, more aggressive selling on the part of the warm air heating contractor.

The downward trend in new construction shows no signs of abating. Replacement business is the immediate hope for the future for the warm air heating industry. This replacement market must be encouraged and expanded to assure full scale operations in our industry.



President C. S. Franke



Birbard N. Jones



William L. McGroth

National Warm Air 38th Convention Program Set

The program for the 38th annual convention of the National Warm Air Heating and Air Conditioning Association offers a good incentive for attendance at Cleveland on December 5 and 6.

THE 38TH ANNUAL CONVENTION of the National Warm Air Heating and Air Conditioning Association will feature two full days of informative talks and lectures on many present-day problems of interest to all heating men. Scheduled for Wednesday and Thursday, December 5 and 6, 1951, the convention will be held at Hotel Cleveland, Cleveland, Ohio.

"The well-rounded program presently being prepared," states C. S. Franke, president of the association, "will include information on marketing opportunities, sales and selling, governmental controls, labor relations, and technical advancements affecting the warm air heating industry."

With the growing feeling among members of the industry that the new home market will have to provide a more substantial part of 1952's furnace sales than in previous years, it is apropos that marketing opportunities in the 1952 new home market be discussed at the convention. To present this information will be Richard N. Jones, advertising sales manager of the Magazine of Building. During the 20 years that Mr. Jones has been associated with the Magazine of Building, he has had an opportunity to observe and study at first hand develop-

ments in the production, marketing, and promotion of all types of building products, including warm air heating equipment.

Another market that presents tremendous possibilities for furnace sales and installations during 1952 is the rural farm market. To outline the potentialities of this market, Victor Hawkins, research director of Capper Publications, Inc., publishers of a number of well-known national and mid-western farm magazines, has accepted an invitation to appear on the convention program. Mr. Hawkins is eminently qualified through his association with Capper Publications and his knowledge of sales and marketing to discuss the profitable rural market for warm air heating equipment.

Labor and Management

William L. McGrath, president, Williamson Heater Co., will discuss the subject What You Should Know About I.L.O. (International Labor Organization). Mr. McGrath has been the employer-member of the U. S. Delegation to the past three annual conferences of the I.L.O. in Geneva, Switzerland, and is in an excellent position to outline the steps being taken by that organi-



Senator Dirksen



J. C. Olson



PROGRAM

38th Annual Convention

National Warm Air Heating and Air Conditioning Association December 5 & 6, 1951 Hotel Cleveland, Cleveland, Ohio

WEDNESDAY, DECEMBER 5, 1951

PRESIDENT'S OPENING ADDRESS

C. S. Franke, American Furnace Co., president, National Warm Air Heating and Air Conditioning Association

GOVERNMENTAL CONTROLS Speaker to be announced later

NEW HOME MARKET FOR 1952 R. N. Jones, Magazine of Building

WHAT YOU SHOULD KNOW ABOUT INTERNATIONAL LABOR ORGANIZATION

W. L. McGrath, Williamson Heater Co.

LUNCHEON

Honorable Everett M. Dirksen, U. S. Senator from Illinois, guest speaker

NOMINATION AND ELECTION OF OFFICERS AND BOARD OF TRUSTEES

SALES AND SELLING
J. C. Olson, partner, 800z, Allen & Hamilton

OBJECTIVES OF THE SHEET METAL CONTRACTOR'S NA-TIONAL ASSOCIATION

J. D. Wilder, executive secretary

THE FARM MARKET

Victor Hawkins, Capper Publications, Inc.

THE ASSOCIATION'S PUBLICITY AND MERCHANDISING PRO-

M. I. Levy, Viking Manufacturing Co., chairman, Publicity and Merchandising Committee

R. A. Nelson, National Warm Air Heating & Air Conditioning Assn.

J. M. Martin, National Warm Air Heating & Air Conditioning Assn.

ASSOCIATION'S MARKET RESEARCH PROGRAM Dr. W. C. Davis, General Electric Co., chairman, Market Research Committee

COCKTAIL HOUR

THURSDAY, DECEMBER 6, 1951

COMMITTEE CHAIRMEN'S REPORTS ON ASSOCIATION AC-TIVITIES

Research Advisory Committee F. L. Meyer, Meyer Furnace Co.

Installation Codes & Technical Education Committee Dean L. G. Miller, Michigan State College

Task Group, Warm Air Industry Emergency Committee T. I. Byrd, Lau Blower Co.

Filed Investigation Committee

C. W. Nessell, Minneapolis-Honeywell Regulator Co.

Indoor Comfort Conferences for 1952

N. T. Hess, Vorys Bros., Inc.

G. A. Voorhees, Association's Technical Secretary

Legislative Committee C. L. Sapp, Farguhar Furnace Co.

LUNCHEON

Guest speaker to be announced later

TECHNICAL REPORTS OF WARM AIR HEATING RESEARCH CONDUCTED AT THE UNIVERSITY OF ILLINOIS

R. W. Roose, research asst. professor of mechanical engineering, University of Illinois

M. E. Childs, special research essistant in mechanical engineering, University of Illinois

zation which will affect labor's policies in relation to management.

Arrangements are being made to have a top ranking official from the National Production Authority present to discuss the probable effects of the then existing governmental controls on the warm air heating industry.

Guest speaker at the noon luncheon on December 5 will be the Honorable Everett M. Dirksen, Republican

Senator from Illinois. He served continuously for eight consecutive terms from the 73rd to the 80th Congresses inclusive. He retired voluntarily on January 3, 1949. In 1950 he was prevailed upon to become a candidate for the United States Senate and was elected on November 7, 1950 by a wide margin over the Honorable Scott W. Lucas, the Senate majority leader. Senator Dirksen (To page 152)

Employee Or Independent Contractor?

ALBERT W. GRAY Jackson Heights, Long Island

The legal points discussed in this article are likely to arise in any case of farming work out to an individual rather than an established contractor.

A N EMPLOYEE works for wages under the directions of his employer. An independent contractor is free of the directions of an employer and responsible to him only for results.

A workman undertook the cleaning of a 3 ft ventilating shaft in a Hartford, Connecticut restaurant. The work was to be done during the night. The man was given no other instructions than that the job be properly done.

In a lawsuit against the restaurant owner for the man's death as a consequence of the ignition of gasoline used in the work, the Connecticut court held he was not an employee but an independent contractor, hence no liability rested on the owner under the compensation laws of that state for the man's death.

"When the doing of a specific piece of work is entrusted to one who exercises an independent employment, selects his own help, has the immediate control of them and the right to control the method of conducting the work, the party undertaking to do the work is a contractor and not a mere employee."

Withholding Obligations

This distinction is vital not only in determining liability of an owner for damages for negligence occurring in performance of installation contracts but in the obligation imposed by the social security act for the withholding of taxes in wage payments to employees that is not imposed when payments are made to independent contractors, however similar the work may be.

A New Orleans department store planned certain installations and contracted for the work with a firm in that city. A load of 6 in. pipe was delivered to the job, unloaded on the sidewalk parallel with the curb, chocked at each end and piled into a pyramid. Some of these 20 ft lengths of pipe became dislodged, rolled into the street, knocked down and severely injured a woman who was passing. The department store was free of any liability for this negligence. In the suit brought by the woman against both the contractor and the store the Louisiana court asserted that this installation work was being done under an agreement by the owner with the contractor, in which the owner had no control over the performance and was not liable for injuries occuring through the fault of the contractor.

"It is well settled that where a contractor undertakes to do work for an owner under a contract which provides that the owner shall furnish plans and specifications and that his only right shall be to insist that the job be done in accordance with those plans and specifications, the contractor does not become the agent or employee of the owner. Therefore the owner is not liable to third persons who may be injured through the fault of the contractor or his employees. This rule is applicable as well where a cost-plus contract is involved as where the contract provides for a fixed compensation."

The owner of an apartment hotel in Oklahoma City contracted for the installation of a gas fired heating system to replace a steam plant then in operation in the hotel. The contractor was given full and complete charge over both the manner and method of the execution of this charge.

The widow of a workman killed from a gas explosion incidental to the work sued both the contractor and the hotel owner. The court pointed out here the application of the same rule, that no liability rested on the hotel owner since the responsibility lay entirely with the contractor. The hotel owner had no control over the performance of the contract and hence was not responsible for any damages and that might occur from negligence in that connection.

"It is settled that an independent contractor is one who, exercising an independent employment, contracts to do a (To page 78)

Innovations Promised At National Wholesalers Meeting

A NUMBER OF INNOVATIONS are promised for the two-day annual meeting of the National Heating Wholesalers Association, Inc., to be held at the Hotel Statler, Cleveland, Ohio, December 3-4, according to a pre-view announcement released by E. L. Wyman, the association's executive secretary. Some 400 members and their guests are expected to attend. The first day's sessions will be for members only. The second day will be open to members, manufacturers and guests. A special program of events also has been arranged for the ladies who attend.

Chief speaker at the annual dinner December 4, will be Harry Stuhldreher, assistant to the vice president in charge of industrial relations administration, United States Steel company. Mr. Stuhldreher, one of the original Four Horsemen of Notre Dame, and chosen all American quarterback in 1924, will speak on Team Work: How the Steel Industry Plays the Game.

Important items of business for the December 3 sessions will be reports of the association's various committees. These will include the Credit and Legal Committee, A. L. Thys, Hinkle Supply Company, Birmingham, Ala., chairman. Discussion of an eight-point questionnaire on credit will be one of the features of this committee's report. Other committees, and their chairmen, who will report, include: Trade Relations, J. E. Phillips, Stelwagon Manufacturing Co., Philadelphia; Dealer Education and Training, R. J. Young, Young Heating Supply Co., South Bend, Ind., both of which committees have big plans on which to report. The Committee on Standardization and Simplification, J. E. Eckstein, Eckstein Co., Pittsburgh, will report on its tangible results for 1951. These include publication and distribution of a key sheet for jobbers on manufacturers style numbers of gravity and air conditioning registers and grilles, and a similar job, nearing completion, on pipe, duct and fittings.

In connection with the report of the New Products and Alternate Materials Information Exchange Committee, A. H. Johnson, Jr., A. H. Johnson Co., Pittsburgh, chairman, there will be displays and demonstrations by a number of manufacturers of new products, including the use of alternate materials as well as standard products. These exhibits will be given in the manufacturers' own room locations.

Among those who are to exhibit are the manufacturers of Carey Dučt;



Harry Stuhldreher

Carlon Products, of plastic tubing; Grant Wilson, Inc., of ARA sheets and Bundy Tubing's substitute for copper tubing.

Other committees to report, and their chairmen, include Codes and Code Standards, A. K. Anderson, Anderson Supply Co., Toledo; Wholesaler Merchandising. A. O. Frederick, State Supply Co., Cleveland; Membership and Constitution Revision, George F. Wheelock, Geo. F. Wheelock Co., Birmingham, Ala.; Publicity and Advertising, L. F. Demmler, Demmler Bros. Co., Pittsburgh.

A government information booth, located near the meeting room, will be open both days of the annual session. Representatives of OPS, NPA and WSB will be presented to answer members' questions.

Speeches by Prominent Men of Industry

On the morning of the second day's session, five speakers have been scheduled. They are, Charles W. Williams, vice president of the Federal Reserve Bank of Richmond, Va., a featured speaker at the mid-year meeting held in White Sulphur Springs, whose subject will be What Lies Ahead; R. C. Mader, of Allied Building Credits, Inc., Cleveland on Modern Method of Merchandising; Cecil W. Farrar, vice president, Richmond Radiator Co., New York City, on As It Was * * * and As It Is Now; Joseph S. Kimmel, president of Republic Electric Co., Davenport, Iowa, Is It Our Duty to go Into Politics?; and The Importance of Sales Planning by George B. Finch, vice president, Jam Handy Co., Detroit.

Information Panel

An information panel, consisting of seven manufacturers, three member wholesalers, two government control officials and representatives of the National Warm Air Heating and Air Conditioning Association and Institute of Boiler and Radiator Manufacturers, will be held at the afternoon session on December 4. This group will answer questions submitted from the floor on perplexing trade problems.

Preceding the annual banquet, the association will hold a cocktail party for its members, manufacturer guests and the ladies. The banquet which is scheduled to start at 7 o'clock on the evening of December 4, will have music by the NHWA Quartet, with Jim Arata, of Cincinnati, as conductor; Susan Fletcher, brilliant young actress of stage, screen and radio background, and star of the One-Woman Theatre, in some of her characterizations and sketches, with Mr. Stuhldreher as the chief speaker.



At the turn of the century sheet metal work was hand-crafted.

Free Enterprise Rewards Employees Under Narowetz Ownership Plan

LOUIS L. NAROWETZ, president of Narowetz Heating and Ventilating Co., Chicago, hit the newspapers, news magazines, radio, and other media all over the world-including the front lines in Korea-last month with reports that he is turning over ownership of his company to the employees who helped build it. Actually, Mr. Narowetz would like to clear the record by explaining that he is making part ownership and eventual control of his company available to selected employees on a stock purchase plan. Aiso, he is setting up a trust fund, earnings on which will go to other employees.

The Story Begins

This story actually started back in October, 1886, when Louis Semon Narowetz, founder of the company, arrived in Chicago from old Bavaria with very little in his pocket. The senior Narowetz received thorough old-country training as an apprentice and journeyman in the metal trades. In his new country he asked only for the opportunity to work and succeed

The success story of the Narowetz Heating and Ventilating Co. is another example of the opportunities to be found in America. Ideals of the company will be carried on through employee ownership.

through his own energy, ability, and thrift. He showed in 55 years of active business life that such a formula produced results.

He started his own business in 1901. In his preceding 15 years as a journeyman and superintendent on many famous jobs throughout the country, he was close to labor. Friendships and understanding developed that lasted throughout his life as an employer.

These principles were imparted to his son. They were part of Louis L. Narowetz's life as he came into the company at the age of 17 to start an apprenticeship training for the trade. At the age of 19, he qualified as a sheet metal worker and became a member of Local 73 of Chicago. Sheet Metal Workers International Association, which his father helped

to organize. He went on to head the company which has numbered among its customers many large buildings and industrial plants in every part of the United States, totalling millions of dollars of work.

It has always been Mr. Narowetz's belief that good labor relations are a primary essential to a successful business. Even though an industry operates within an agreement with any union, it is possible to develop relations between management and labor to include profit sharing. He also feels that labor should not be considered a commodity, but an important part of private enterprise.

His activities have borne out this belief. He has been a leader in encouraging the system of collective bargaining along a pattern sponsored by the Sheet Metal Workers Inter-





Louis S. Narowetz, company founder.

national Association and the Sheet Metal Contractors National Association. He has sponsored a welfare plan for the sheet metal industry and helped establish it for sheet metal workers in the Chicago vicinity. He has served on the national joint board for settlement of jurisdictional disputes as the sheet metal industry's sole representative. He is currently a member of the liaison committee of mechanical trades appointed to look after the industry's interests in connection with commercial as well as defense work.

And now, at the end of 40 years of this kind of association, it is his desire to continue the company with the forthright principles initiated by his father and to give the opportunity to his workers to share in the Narowetz Heating and Ventilating Company's activities and earnings.

He, therefore, established last December a stock purchase plan, whereby 48 per cent of the company stock is being bought by a group of key

The expanding Narowetz shop is efficiently organized for rapid production on large scale.

employees who comprise the company's board of governors. This plan contemplates complete payment by the various individuals involved for their respective shares of the stock over a five year period. The shares are issued to the individuals from time to time as payment for them is completed. The individual receives immediately the quarterly dividends on all the shares he is buying, and thus he has these funds (as well as any other resources) to use in paying for his stock. All payments are made to the company's bank, which issues the stock as payment for the shares is completed. Since he receives full dividends upon subscription, he must pay 4 per cent interest on his unpaid balance.

Ownership of the stock is confined to employees of the company. In the event of resignation the owner of the stock would sell his shares back to the company at an agreed price per share.

Since production workers in a business serving the building industry are to a degree migratory, it is Mr. Narowetz's feeling that it is not feasible for them to become direct owners of stock. However, in order that they too may participate in some of the advantages of employee ownership of the company, Mr. Narowetz plans at an opportune time to set aside 25 per cent of the total stock to be held in trust by the bank. The earnings from this block of stock will go to the production employees as dividends are declared, but this stock will remain in trust.

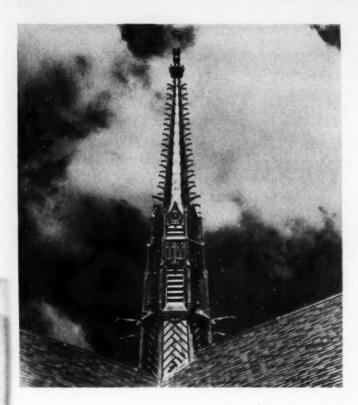
Mr. Narowetz continues to hold the remaining 27 per cent of the com-



Louis L. Narowetz, now president.

pany's stock. However, the board of governors has been established for eventual control and policy-making of the company. It is planned that eventually the final block of stock will also be available for purchase by the board of governors. Since management of a firm must see to the finances, procure the work to be done, direct the firm's operations, maintain its credit, etc., it is essential that management—as represented by the board of governors—have the controlling interest, Mr. Narowetz points out.

Mr. Narowetz does not ever contemplate complete retirement from the Narowetz Heating and Ventilating Company. When control has passed to the board of governors in accordance with the stock purchase plan he has established, he looks forward to serving perhaps as an elder statesman. He will direct his efforts where they may be most helpful to the sheet metal industry, labor, and his 200 "sons."



Projects like this become scarcer as time goes on. The pride of accomplishment of the worker is an important part of such a job.

LAWRENCE E. GICHNER Washington, D.C.

A Copper Fleche In Gothic Style

A TYPE of work in which the old time artisan took immense delight and which the modern sheet metal contractor sees all too infrequently has just been completed on Memorial Chapel of Loyola College by the Fingles Co., Sheet Metal Fabricators of Baltimore, Md.

A lead coated copper fleche rising 50 ft above the ridge of the roof crowns the chapel and catches the eye of the beholder for miles around. Designed by architects Gaudreau and Gaudreau in true Gothic style, it is an item of significance, beauty and endurance.

Steeple Significant

The church steeple in olden days served a manifold purpose; as land mark to the wanderer, an inspiration to the faithful, and a symbol of the loftiness of Christianity — high above everything else towered the cross atop the steeple. The flat faced, flat topped buildings of our modern age give the skilled metal artist all too little opportunity to exercise his artistic abilities to their fullest. Molded cornices, intricate balustrades, attractive spoutheads, are almost completely items of the past. But thanks to architects like Gaudreau and Gaudreau the weak flame of opportunity is still kept aglow for the serious mechanic and contractor to show their skill.

An intimate part of the design were gargoyles that fiercely and menacingly projected their distorted bodies and grotesque heads at the upper part of the building literally serving as an actual spouthead into which the roof gutters drained.

In keeping with its Gothic architecture that spread through Europe during the picturesque Middle Ages, this modern built fleche has many gargoyles but they have been reduced today to a decorative function rather





Considerable soldering was required

than a utilitarian spout that spewed water away from the foundations.

Parts Assembled

The structure of the tower is fundamentally steel framing and wood covered with 20 oz lead coated copper stamped and formed flat sheets. The crown, ball, filigree, and gargoyles were stamped in over 300 individual pieces that were assembled by the Fingles Co. The main structures, spire and paneling were fabricated right in Fingles plant, as well as the louver appearing parts, which are louvers in design only and not actual louvers for ventilation.

Since all lumber was specified to be creosoted, all wood areas were covered with rozin sized building paper to prevent creosote from touching the lead and copper.

Every Fastening Brass

All the metal in addition to being heavily tinned, soldered and sweated together was attached to the wood with brass bolts that go completely through the wood. Every crocket, besides being screwed into the wood, has each screw head capped over. No nails were used, only brass screws and bolts throughout.

The whole tower is solidly sheathed with copper and although it has the appearance of being pierced, yet in actuality it is solid.

This steeple is a credit to the architects and the contractors who performed the work and will serve as a monument which will outlast all those who were responsible for the design or played a part in its construction.

New Trustees Elected

ON SEPTEMBER 14 the board of trustees of the National Warm Air Heating and Air Conditioning Association met in Chicago to elect four new members to the board from a field of nine nominees.

Several months ago the manufacturer members of the association approved increasing the number on the board of trustees from 13 to 17 members.

Following are the names of the four new members and their company connections. They will serve for the remainder of 1951 and for the years of 1952 and 1953: Sheldon Coleman, president, the Coleman Co.; Lyle C. Harvey, president, Affiliated Gas Equipment, Inc.; Edward P. Hayes, vice president, C. A. Olsen Manufacturing Co.; and John W. Norris, president, Lennox Furnace Co.

Following are the present incumbents on the board of trustees, including the officers: C. S. Franke, president, American Furnace Co.; W. D. Redrup, chairman of the board, Majestic Co.; C. B. Phillips, vice president, Surface Combustion Corp.; George Boeddener, secretary-treasurer, National Warm Air Heating and Air Conditioning Association; R. M. Cook, vice president, Thatcher Furnace Co.; H. G. Cross, president, Waterman-Waterbury Co.; H. F. Curtis, vice president, Auer Register Co.; G. W. Denges, vice president, Williamson Heater Co.; M. I. Levy, president, Viking Air Conditioning Corp.; F. L. Meyer, president, Meyer Furnace Co.; H. F. Randolph, president, International Heater Co.; and L. S. Redford, vice president, Jackson & Church Co.

How To Figure Infiltration (II)

Frederick B. Morse, P.E.*

The theory of exfiltration is clarified in this article. Sizing of the return air system is the most important factor in this method.

N OW WE have arrived at the crux of the exhitration method. The return grille and duct for the living room must be sized carefully so that it does not handle more than 108 cfm. The reason for this - the homeowner wants 85 cfm to leak out the window and door cracks in his living room. When he relaxes in the living room with his pipe and a good book, he does not want 85 cfm of - 10 F air whipping around his shoe laces. On the contrary, he wants 85 cfm blowing out those window and door cracks. If the return grille and duct for the living room is oversized and handles 175 cfm, then exfiltration will be only 18 cfm (193 - 175 = 18 cfm). Part of the total crack length in the living room will exfiltrate 18 cfm, but the rest of the crack length will infiltrate 67 cfm (95-18=67 cfm). This means only part of the job is being done as 67 cfm of wintry air is infiltrating into the living room.

It is good design to vent the kitchen and bathroom to the attic or directly outside and not connect these rooms into the return system. Thus the kitchen vent should handle 109 cfm (204-95=109 cfm) and the bathroom 32 cfm (41-9=32 cfm). Total air handled by the kitchen and bathroom vents is 141 cfm (109+32=141 cfm).

The return duct system from the other four rooms of the house must handle 359 cfm.

Combustion Air

The amount of air necessary for combustion must be furnished to the burner or stoker in order to keep the fire burning. The air then becomes part of the products of combustion and goes up the stack. Unfortunately many engineers fail to realize the importance of providing combustion air and scarcely give it a second thought.

The air required for combustion can be read from Fig. 3 by locating the bonnet output in Btu per hr along the bottom. Follow this value vertically to the curve. Trace a horizontal line to the left; read the amount of air that will be required for combustion on the left scale.

Balance Necessary

"Nature abhors a vacuum." Most people heard that statement in elementary school. Even so the reader would be flabbergasted at the number of engineers who try to rub Nature's fur the wrong way by thinking she will make an exception for the heating systems they design.

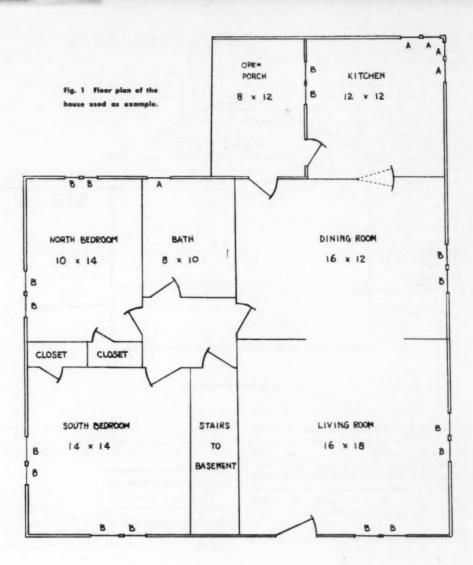
For an ordinary mechanical warm air heating system no one can put more air into a room than leaves the room. And that goes the other way too, no one can take out more air from a room than comes in. What applies to rooms also applies to houses.

Air Intake

Fig. 4 is a sketch of the house we have been discussing. The air leaving the house totals 521 cfm (32 + 141 + 348 = 521 cfm), and provisions must be made for 521 cfm to come into the house. If a basement window is left open several inches, the 521 cfm will come in. But then the basement will be cold. A good solution is to make an opening in the foundation wall just under the sill and run a duct from the outside to the suction side of the blower or the return trunk duct. See Fig. 5. For a basementless house with a crawl space an opening can be cut in the floor for a fresh air duct, providing the crawl space has sufficient openings for outside air to enter. For houses with a concrete slab floor the fresh air duct can be run to the attic and enough louver area provided in the gables to allow outside air to enter the attic.

The fresh air duct for this house should be sized to

^{*}Consulting Mechanical Engineer, West Lafayette, Ind.



handle 521 cfm at a velocity of 500 to 800 fpm. The end of the duct opening to the outside should be covered with hardware cloth to keep out leaves and flies. It is recommended that the duct open on the side of the house facing the prevailing wind. A non-return damper should be used to prevent air leaving the house through the fresh air duct at times when the outside opening is on the lee side of the house.

Sizing the Furnace

Three factors should be considered in determining furnace size.

Transmission heat loss. This is the total of column
 of Table 3.
 51,730 Btu/hr

2. Fresh air. This can be computed as follows:

H = 60 x fresh air, cfm x C x TD

 $= 60 \times 521 \times 0.018 \times 80$

45,100 Btu/hr

 Warm-up. For fuels automatically fired (oil, gas, stoker) a 20 per cent warm-up allowance is customary.
 The total of items 1 and 2 is 96,830 Btu/hr so the 20 per cent warm-up is 19,370 Btu per hr.

A furnace would then be selected that would have a minimum bonnet delivery of the total of these three items or 116,200 Btu per hr.

The blower should be selected to overcome the static pressure of the connected supply and return ductwork.

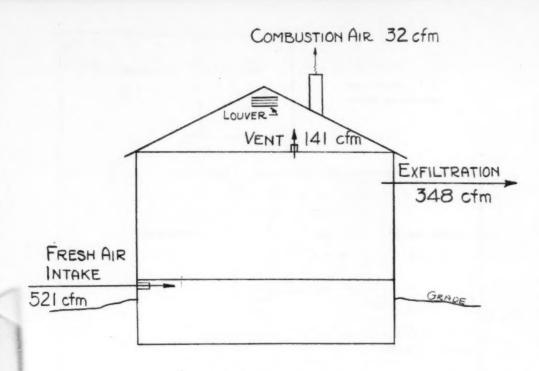


Fig. 4 Fresh air required

The fresh air duct need not have a balancing damper. Mother Nature is the automatic regulator for she will not let more air through the fresh air duct than escapes from the house through the cracks, vents and chimney.* This means that if, after a few heating seasons, the homeowner puts on several storm windows and reduces the exfiltration from 521 cfm to 400 cfm, he need not think the fresh air duct will still be handling 521 cfm. For if

the blower pushes only 30 pounds of air per minute (400 cfm) from the house, Mother Nature will push only 30 pounds per minute through the fresh air duct.

Comparison of Infiltration and Exfiltration Methods

The value in column 2 of Table 3 is the heat loss for each room by transmission only. Now consider Jones and the infiltration method. For the kitchen he would have added the heat represented by the crack leakage (95 cfm) to transmission loss. The 95 cfm crack leakage

*This is the justification for using cfm in Fig. 4 instead of pounds.

Table 4 Heat Loss and Air Supply for Infiltration Method

1	2	3	4	5	6
	Infiltration	Heat	loss, Btu per hou	ur	Air supply
Room	cfm	Transmission	Infiltration	Total	cfm
Kit	95	12,160	8,220	20,380	377
DR	61	6,720	5,270	11,990	222
LR	85	12,400	7,350	19,750	342
S-BR	49	9,490	4,240	13,730	238
N-BR	49	8,570	4,240	12,810	246
Bath	9	2,390	780	3,170	59
Total	348	51,730	30,100	81,830	1,484

represents 8,220 Btu per hr giving 20,380 Btu per hr as the sum of transmission and infiltration. This is recorded in Table 4.

Now how much air must be supplied to the kitchen? For a 120 F register temperature the kitchen would require 377 cfm to supply 20,380 Btu per hr while the air cools to 65 F. Now for the exfiltration method the heat loss of the room was satisfied with only 225 cfm being supplied because there was no infiltration.

The total supply of air handled is given by the total of column 6, Table 3, for the exfiltration method and column 6, Table 4, for the crack method. In one case the blower must handle 1,484 cfm while in the exfiltration method only 939 cfm are required.

Now look at the duct sizes. For the crack method the 377 cfm for the kitchen would require a 12 in. round duct (assuming 500 fpm) or an 8 by 15 rectangular duct. For the exfiltration method the 225 cfm for the kitchen requires only a 9 in. round duct at the same velocity, or an 8 by 8½ rectangular duct. There is a real saving. And that is just for the kitchen — there are many more pounds of sheet metal to be saved in each part of the duct system.

Summary

For years heating contractors and engineers have been getting by with the air change method of figuring infil-

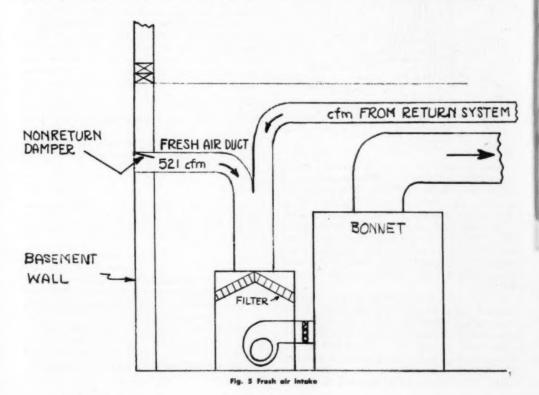
tration for residential jobs. While the author is just as willing as anyone to save time and work, he is not in favor of doing so with a short cut that has no engineering basis.

For residential heating the use of the crack method for figuring infiltration should be limited to gravity warm air, hot water, and steam systems.

The drafts caused by infiltration of cold air are often a source of complaints by homeowners. It is better engineering to provide a fresh air intake and stop the cold air from sneaking in all the window and door cracks. A heating engineer using the exfiltration method often prevents, unknowingly, many domestic squabbles. Infiltrating air frequently chills a member of the household before the cold air is warmed to room temperature. The most natural thing to do in such a case is turn up the thermostat. But this raises the temperature of the entire house in an attempt to satisfy just one person. Then it is too hot for other members of the family and bickering often results.

A great deal of overheating can be avoided by using the exhibitration method to stop the cold air from coming in through the cracks.

The exfiltration method and the mechanical warm air heating system offer the heating engineer an opportunity to save metal and money. Most heating engineers and contractors would be glad to have more of both.



AMERICAN ARTISAN, NOVEMBER, 1951

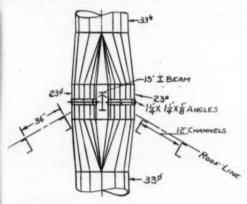
Pattern Development For

Y Branch Fitting For Obstruction

HUGH B. REID Detroit, Mich.

In THE installation of an exhaust system in a large factory, interference was encountered where the stack was to exit through the roof. A 15 in. load-bearing I beam was located at the roof peak and could not be cut. A Y branch as shown in the sketch was the solution to the problem.

In designing the Y branch, consideration must be given to pipe sizes so that the stack will be free from high and low pressure areas.



As an example, a 33 in. pipe has a cross sectional area of 855.3 sq in.; a 23 in. pipe has a cross sectional area of 415.4 sq in. Multiplying 415.4 by two will amount to 830.8 sq in. Thus a 33 in. pipe will be approximately equivalent in area to two 23 in. pipes.

The center crotch section will add to the static pressure of the system which in turn will add to the power load. This could be partly overcome by putting a frictional type baffle in the Y branch. This would cut down air turbulence and add to the smooth performance of the system.

It will be noted from the front half and plan views that the Y branch fitting is symmetrical about both horizontal and vertical center lines. As a result all the drawing required is a half front view to produce the fitting.

The method of finding the true length lines may differ from that used by most sheet metal pattern draftsmen, so the following is a clarification of the simplified short method. In preparation for the solution to the problem a study of line L and F will be used for explanatory purposes. On the front view drawing the vertical center line L represents a line drawn from the center point of the 2 in. diameter pipe to a point on the center line of the crotch between the two 1 in, diameter pipes. The line on the front view is $2\frac{1}{4}$ in, long and the half plan view shows the line falling over 1 in. Therefore by



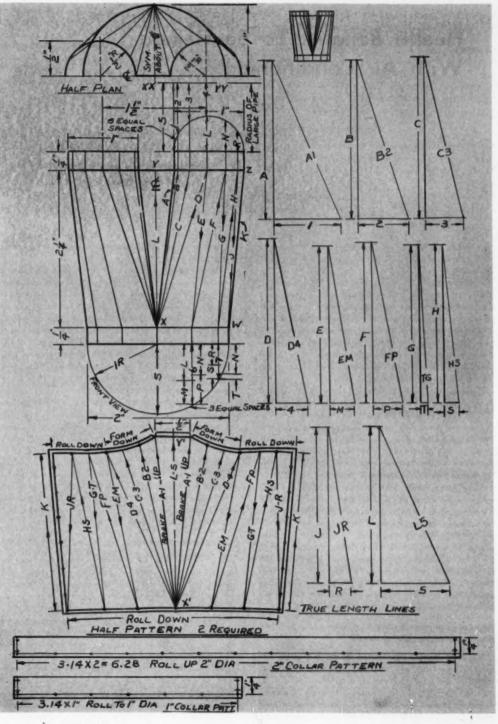
measuring the $2\frac{1}{4}$ in. on the horizontal leg and the 1 in. on the vertical leg, the hypotenuse of the triangle will be the true length of the line L-S. Line F is distance 6 from the center line of the 2 in. diameter pipe and distance N from the center line of the 1 in. diameter pipe. The half plan view shows that the two 1 in. diameter pipes and the 2 in. diameter pipe have a common horizontal center line. Thus by subtracting N from 6, the distance marked P will represent the horizontal distance that line F falls over traveling from distance 6 on the large pipe to distance N on the small pipe. Therefore by measuring length F on the horizontal line and difference P on the vertical line, the hypotenuse will be the true length of the developed line FP.

Solution

Here is a step by step solution to the problem. Draw the half front view as follows:

- Draw the center line marked L which is 2½ in. and mark the line X-Y.
- 2) From X and Y draw lines perpendicular to the center line. Establish points 1 in. from X and 1¼ in. from Y and through the points drew the line marked W-Z. From Z measure back ½ in., the radius of the small pipe and draw a half circle. Divide the half circle into 6 equal spaces and through the points, draw lines perpendicular to and intersecting the line Y-Z.
- With X as center and X-Y as radius draw a quarter circle. Divide the quarter circle into three equal spaces and through the points draw lines perpendic-

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Health Benefits To Be Gained With Air Conditioning

The important part that air conditioning can play in good health is not always emphasized in sales campaigns. Dr. Schweisheimer tells of the benefits of air conditioning.

A NEW YORK Banker, 57 years of age, had several attacks of angina pectoris during an extremely hot month of June.

Angina pectoris is a highly unpleasant and sometimes dangerous condition of the coronary arteries, those most important arteries that feed the heart itself to keep it in efficient shape and function. When the banker was well again, after a few weeks of rest and treatment, his wife did not want him to return to his work during the summer months. She made reservations in a resort place sky-high up in the mountains where pleasant day breezes and cool nights could be expected.

However, the banker had to go on working in New York, heat or no heat. He could not leave without serious damage to his financial status and his business. His doctor prescribed two air conditioning units for him — one in his office, one in his bedroom. The prescription was carried out. No heart trouble occurred any more to the hard-working banker despite a prolonged heat wave in August and September.

Some people suffer greatly from hot days and heat waves while other people can stand them well. Of course, those are well off who have the blessed chance of working, eating, resting, sleeping in sensibly air cooled rooms during excessively hot days. A drastic change of temperature is of no avail. A difference of 20 F below outside temperature may be pleasant and there is hardly any danger of catching cold. The cool atmosphere and resulting cool poise of everyone living and working in an air conditioned room are good for the nerves of the inmates as well as for their heart.

Two Cases of Heat Stroke that Could Have Been Avoided

What an overheated room means to all concerned, may be seen from two cases of heat stroke which occurred in the same operating room on the same day, as reported by Dr. M. B. Genauer. Usually operating rooms in modern hospitals are air conditioned, a most

attractive feature of those modern rooms for doctors, patients and nurses.

This operating room was not air conditioned. There were no windows in the operating room, and ventilation was poor. The dry and wet bulb readings were 88 F and 83 F respectively, the relative humidity was 81 per cent. The multibeamed surgical lamp raised the temperature on the operating table to no less than 114 F. The rectal temperature (taken in the lower part of the intestines) of the patients on the operating room table was 105.5 and 105.4 F at the conclusion of the operation. Both patients, young men of 18 and 19 years of age, had ceased sweating.

They were removed to a cooler recovery room where ice water, ice packs, oxygen, and intravenous solution of sodium chloride were administered to save them. Sweating did not begin until nine hours after the operation. No such heat stroke could have occurred in an air conditioned room. Adequate conditions, according to Dr. Genauer, center about the maintenance of a cool room of low humidity in which air currents are sufficient to produce comfort. The danger of a heat stroke for nurses and surgeons in the operating room under such conditions is hardly less than for the patient.

Two Comfort Zones

For a long time the so-called comfort-zone was important in construction of buildings and homes. It means that particular zone of temperature, humidity, air motion and mean radiant temperature within which the inhabitants of a room feel well and comfortable.

Research work of the last few years, carried out at the research laboratories of the American Society of Heating and Ventilating Engineers, has produced more knowledge regarding the comfort zone. First it has established the important fact that in temperate climates such as ours there is not just one year round comfort zone, but there are actually two comfort zones. One, valid for summer time, averages 71 F while the comfort

zone for winter averages 66 F. Consequently, the air conditioning engineer has to set his thermostat and humidistat twice during the year: once in summer and a second time before winter arrives.

It had been shown previously in regions with warm climate that the attempt to set the temperature of air conditioned movie houses at 70 F the whole year round brought vehement protests from the movie-goers and finally reduced attendance of the theatres. When, however, engineers in Manila in the Philippines set the indoor temperature of the theatre a few degrees below outside temperature, everybody was comfortable in the theatres.

Zulma Steele has stated that in the United States the

James as follows: Air supply and distribution, this is the basis of ventilation; Temperature, humidity and air motion, these are interrelated, and their combined effect is expressed by the effective temperature; Radiation, may be an important factor under some conditions; Odors, dust, bacteria, injurious substances, these factors may be said to determine the purity of the air. No system of air conditioning should be designed without considering these factors.

Air Conditioning and Hay Fever

That air conditioning is not identical with air cooling, as is assumed by a good many people, is obvious from its use for the treatment of hay fever. Hay fever is an



summer comfort zone of warm humid New Orleans is 4 F higher than that of breezy Chicago or Pittsburgh. In any city, north or south, summer conditions demand that as the outside temperature rises or falls, so must the artificially induced weather within. You cannot refrigerate human beings, Steele says, as though they were a carload of California lettuce. A consulting engineer expressed his experiences with air conditioning in these words: "The proper indoor temperature is one of which you are not conscious."

The problem an air conditioning engineer or a building engineer has to cope with in summer is clear from this comparison: an office worker requires an effective summer temperature of 67 F to feel comfortable, while a charwoman scrubbing the floor of that same office will feel uncomfortably warm at a temperature above 58 F. To find the proper medium temperature and humidity in homes and buildings needs a considerable experience.

Satisfactory air conditioning, from the standpoint of human comfort and health, depends upon a number of factors. They have been listed by Allen, Walker and allergic condition with inflammation of the mucous membranes of nose and eyes, resulting from a specific sensitivity to certain foreign substances, mostly the pollen of plants. It usually recurs each year, the time of the attack depending upon the time of flowering of the plant.

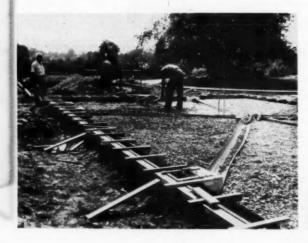
Mrs. A.C.B., the wife of a Chicago businessman, had exhausting attacks of hay fever every year starting at practically the same day in June and going on for about six weeks. No treatment whatever was successful, and Mrs. B. was compelled to flee her home and the whole region of Chicago every year in order to avoid those distressing attacks of hay fever. Every year she went to a resort place high in the Rocky Mountains where no plants were flowering to the pollen of which she was allergic.

Eventually her home in Chicago was air conditioned and this was enough to keep irritant pollen away from her. She stayed in her rooms as much as possible during the critical weeks, went out only after a rain had cleared the air of pollen, and all in all had a most happy

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Correct Slab Treatment Guarantees Results In Perimeter Heating With Non-Metallic Ductwork



Treatment of the slab is the vital factor in perimeter heating. Here is a model job.

WALTER RUDOLPH Erie, Pa.

Fig. 2 Collapsible forms for slab edges are an footing, with 8 in. of lake gravel fill going in; note 10 in. sub-form for ductwork and radial layout of heating system ductwork; Robert Dvorak, 8r., looks over job at left.

IN THE emergency use of non-metallic ductwork in residential heating systems, a notable case history in the field is provided by Brentwood Village, greater Cleveland, Ohio. This is a 300-home building development, estimated to cost \$3,400,000 by Robert Dvorak & Son, builders.

House prices start at \$11,200; the project has been

underway for several months and will require another two years or so to complete. Designs are American traditional of the Colonial era, with authentic Cape Cod, Western Reserve, Williamsburg, Gloucester, Providence and Nantucket architecture.

"We traveled for a long time, and through many states, studying various types of homes and their heating sys-



Fig. 3 In the usual order, Robert Dverak, Jr., builder, James Martin, Industrial relations, NWAH & ACA and, Juck Scheel, heating engineer of the City of Cleveland, look over sub-forms, concrete plenum and registers, and 6 in. ductwork sample that will go into heating system.



Fig. 4 Closeup of the insulating method at the concrete slab perimeter, with details of collapsible form shown also; fibreglas strip, 12 in. deep, is braced by ordinary composition building board strips; feeting is 36 in. deep, 12 in. wide.

tems," related Robert Dvorak, "and we finally decided to specify the radial forced warm air system incorporated here, designed especially for basementless type homes."

Homes are on 46 by 100 ft lots, with concrete slab floors measuring 24 by 32 ft, laid out to include an Lshaped living-dining room, kitchen, utility room and two bedrooms on the first level, with a stairway leading to an unfinished second floor.

In addition to the use of processed (laminated) paper ductwork, these homes include concrete plenums and registers, the latter placed under windows to halt downwash of cold air and provide an even distribution of heat. The plenums and registers are preformed by contract to a local concrete company. The 6 in. ductwork comes to the job cut to length. Metal fittings are used where needed, but conservation is the basic principle of the design.

Foundation is trenched, and the trench acts as a form for pouring the 3 ft deep footing to grade. Forms for the slab are set to the exact height desired, perfectly level, and act as a level for the slab. The forms, incidentally, are the collapsible, re-useable type, made from wood by the builders.

Perimeter of the slab is insulated against heat loss with asphalt coated fibreglas board 12 in. deep. Eight in. of lake gravel fill are manually spread, and a moisture barrier of duplex paper covers this fill and goes over the top of the subforms under the supply ducts. This subforming is done with 10 in. paper duct, halved and lined from the center plenum to the registers.

This subforming insures 2 in. of concrete around the ducts with wooden wedges inserted here and there along the heat line length, between moisture barrier and the ductwork, to aid flow of concrete around ductwork. Four in. of concrete are poured. Another thing, just (To page 160)



Fig. 5 With reinforcing mesh in place, non-metallic ductwork connected with moisture burrier instelled, slab is about to be poured. Ductwork is ordered in continuous lengths from factory and cut to fit.



Fig. 6 Closeup shows running of concrete, 1 — $2\frac{1}{2}$ — $3\frac{1}{2}$ mix, around the non-metallic ductwork. Dvorak feels assured that at least 2 in. of concrete will surround all ductwork; slob is 4 in. shick.

Resistance Concept Of Heat Transmission Part V (Conclusion)

S. KONZO

Professor of Mechanical Engineering University of Illinois

W INDOW surface temperatures and moisture condensation were analyzed in the previous installment. It was shown that frosting and fogging of glass surfaces could be minimized by increasing the surface temperature of the glass.

This discussion will cover the inside surface temperature of walls. For this purpose, equations (13) and (14) previously presented will be modified to the following forms: able minimum surface temperature for the wall should be about 25 F in zero weather.

The second step consists in determining the surface temperature of the uninsulated metal wall for an indoor air temperature of 60 F and an outdoor air temperature of 0 F, as shown in Fig. 26a. The resistance of the inner film is considered as 0.61 for ordinary surfaces. That is, R_1 is 0.61 resistance units. The resistance of the metal wall is neglected, since the resistance of a steel

Temperature of inside surface = Room air temperature — Temperature drop from indoor air to inside surface of wall

The resistance concept of heat flow makes it possible to analyze many heat flow problems of the type that will be illustrated in the following sections.

Surface Temperatures of Walls

Equations (15) and (16) can be used to determine inside surface temperatures of any wall construction for which the total resistance to heat flow can be calculated. As a typical problem that occasionally faces the heating engineer, moisture condensation on a metal wall structure can be considered. In certain farm buildings and in some storage or manufacturing buildings, an uninsulated Quonset-type building has been used. Since the resistance of the sheet metal wall is negligible, and practically the same as that of glass, all moisture troubles encountered with glass are duplicated. In fact, Fig. 19 which was presented in a previous issue can be used to obtain the inside surface temperature of the uninsulated metal wall.

The problem may be presented to the heating engineer in another form, as follows: if a given storage building having a thin metal wall is to be maintained at a temperature of 60 F and a relative humidity of 20 per cent in zero weather, how much insulation will be necessary to raise the surface temperature of the wall to a value which will prevent moisture condensation?

The first step in the solution consists in determining dew-point temperature, or that temperature at which condensation will begin. From values given in Table 6 and Fig. 20 the dew-point temperature for 60 F air at a 20 per cent relative humidity is determined as 19 F. Allowing a margin of safety, let us assume that a desirplate which is 0.1 in. thick is about 0.0003 units. The resistance of the outer film, R_0 , is assumed as 0.17 units, the value commonly used for all building materials except glass and similar smooth surfaces.

The total resistance is 0.61 plus 0.17, or 0.78 units. The temperature drop through the inner film is (0.61)/(0.78) times 60, or 47 F.

The temperature of the wall is 60-47, or 13 F. This is substantially lower than the desired wall temperature of 25 F.

The third step in the analysis is shown in Fig. 26b. The wall should be insulated until the inner surface temperature is 25 F, which is equivalent to a temperature drop of 35 F. By means of equation (15) the following relation can be shown to exist:

$$35 = \frac{(0.61) \quad (60)}{R_t}$$

in which, R_t the total resistance is the sum of R_1 , R_c , and R_o . From the above equation, R_t is 1.05 resistance units. The value of R_c is 1.05 — 0.78, or 0.27 units. Since insulating boards have a resistance of 3.03 units for each inch of thickness, the required thickness is only 0.27/3.03 or about 0.1 in. From a practical standpoint it may be more desirable to install either a $\frac{1}{4}$ in. or $\frac{3}{8}$ in. thickness of board insulation on the inside sruface of the metal wall. One important factor should be recognized. If any water vapor can pass through or get around the board insulation the water vapor will con-

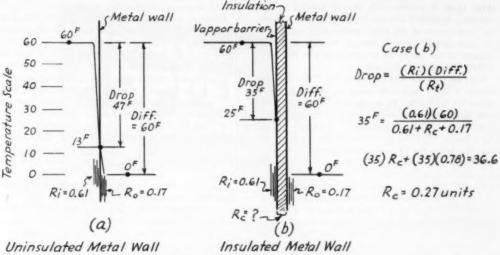


Fig. 26 Surface temperatures of metal wall.

dense on the metal wall and soak the material from the back side. It is essential that an effective vapor barrier be installed on the room side of the insulating board so that practically all vapor travel is stopped at the room surface. This can be done by mopping all joints and the top surface with tar, or by the application of a vapor barrier, such as foil-backed paper, on top of the insulation.

This problem of moisture condensation on walls is also encountered in some basement walls. One of the solutions that will be effective is the application of an insulating board on the room side of the concrete wall. Vapor proofing the insulation is essential.

Temperatures of Interior Surfaces of Walls

Equations (15) and (16) and the method shown in Fig. 26a can be extended to cases in which the interior surfaces of a wall are to be investigated. The general method of approach is shown in Fig. 27. Temperature drop A, amounting to 23.8 F, was determined by means of the ratio of the resistance 0.61 and 1.54. The temperature drops B and C were determined in the same manner, except that the respective ratios were 0.76/1.54 and 0.17/1.54. The temperature drop of 29.6 F applies to points A and B in the insulation. The surface temperature at point B is therefore 60-2.3.8-29.6, or 6.6 F. Obviously, if any vapor can reach the surface of the metal wall, the condensation will be in the form of ice.

In general, the more effective the insulation, the lower the temperature of the wall surface next to the insulation. Hence, in a frame wall filled with mineral wool insulation the temperature of the sheathing will be considerably lower than for an uninsulated wall. It is little wonder, therefore, that if water vapor can reach the sheathing, the problem of moisture condensation in the sheathing is greatly aggravated. Not only is the sheathing temperature low, but the fact that the studding space is filled with insulation prevents or retards the passage of the water vapor up the studding space into the attic space. As explained previously, the only satisfactory solution is to effectively prevent water vapor from passing from the room into the studding space. Vapor barriers of suitable effectiveness are available. The responsibility of applying the vapor barrier lies with the building contractor. However, since any complaints of condensation may eventually be referred to the heating contractor, he should be interested in seeing that a proper installation of the vapor barrier is provided.

Up to this point in the discussion the effect of surface temperatures on condensation has been emphasized.

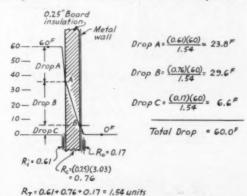


Fig. 27 Calculation of successive temperature drops in simple

Other types of problems can also be handled by the resistance method of heat flow calculations. By measuring temperatures of the inside surface of a wall, room air, and outdoor air it is possible to make a shrewd estimate of the nature of insulation used in the wall, without ripping open the wall.

Consider first the case shown in Fig. 28a. We can observe a frame wall with siding on the exterior and plaster on the inside. By means of a suitable temperature measuring instrument, preferably thermocouples, three temperatures are determined as indicated. Applying equation (15), we can solve for the value of the total resistance, R_t . For the values given, R_t is about 3.66 units, which corresponds closely to the total resistance of an uninsulated wall.

Similarly, in Fig. 28b where the measured temperature of the inside surface is 67.5 F, total resistance is determined as 11.7 units. This corresponds closely to that of a fully insulated wall having between 3 in. to 35% in. of insulation between the studding space.

By similar processes, general curves can be derived that apply to a wide range of indoor-outdoor temperature differences and to widely varying values of the total resistance, R_t , as shown in Fig. 29. The use of the curve

can be shown by the preceding example:

Given an indoor air temperature, t_1 , of 70 F and an outdoor air temperature, t_0 , of 22 F, the temperature difference from indoors to outdoors, $t_1 - t_0$, is 70 — 22 or 48 F. Follow vertically on the 48 F scale to one of the diagonal lines corresponding to the temperature drop from indoor air to indoor surface, $t_1 - t_0$. In the case shown in Fig. 28a the measured temperature drop was 70 — 62 or 8 F. Follow horizontally to the left to find the value of the total resistance, R_t , which is about 3.7. Follow horizontally to the right-hand scale and find the overall U value for the wall, which is about 0.27 Btu per sq ft, hour — F. A frame wall with a U value of about 0.27 is not insulated.

Some precautions should be taken in the method described. The values shown in Fig. 29 are exact, but actual temperature measurements made for a given wall may not be precisely determined. The temperatures should be obtained with good instruments, particularly in determining the wall surface temperature. Portable instruments are available with thermocouple attachments that will give readings within about ½ F. Measurements of wall surface temperatures should be made on a

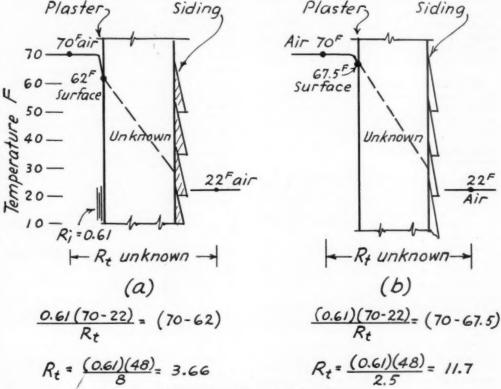
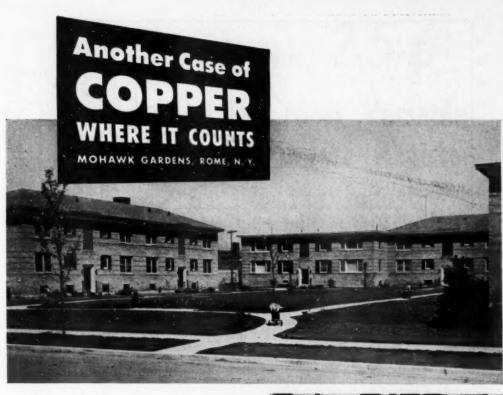


Fig. 28 Estimating wall construction from three temperatures



The very scarcity of copper has served to point up the many merits of this metal better than anything we might say about it. For, when architects, builders and contractors have tried to find a substitute, they soon discovered many places in building construction where there just isn't any substitute. And they don't hesitate to tell us so.

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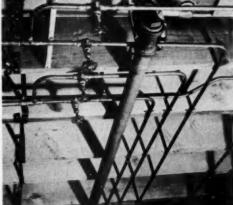
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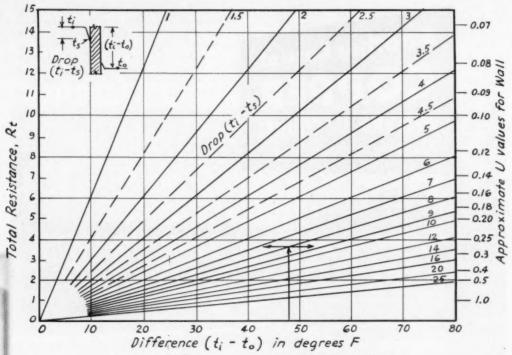


Fig. 29 Relation between temperature drop and wall construction.

shaded wall that is not too close to doors or windows. The method described has been used by the building inspector of the city of Minneapolis. Some amount of deviation can be expected between calculated values and actual values for a given construction, since calculated values are based on a wind velocity of 15 miles per hour, which may not exist at the time of measurement.

Effect of Surface Temperatures on Comfort

One other aspect of surface temperature of window and wall surfaces deserves some mention. With the advent of panel heating, considerable emphasis has been placed upon the possibility of maintaining comfort with reduced air temperatures, provided that the temperatures of surfaces which the occupant faces are correspondingly increased. The statement has been made, for example, that for equal comfort conditions the sum of air temperature and room surface temperature should be 140 F. That is, that equal comfort will exist in room A having an air temperature of 70 F and an average surface temperature of 70 F, and in room B having an air temperature of 68 F but an average surface temperature of 72 F. Exact proof of this statement is lacking. Some evidence exists that with an air temperature of 68 F the required value of the average surface temperature is several degrees higher than 72 F. Regardless of the surface temperature effect on comfort, the conclusion has been reached that bodily comfort is partly dependent upon temperatures of room surfaces to which the body is exposed.

In a normal room environment, one, two, or three of the walls will be interior walls, and three, two, or one of the walls will be exposed to the weather. Furthermore, both ceiling and floor surfaces will have to be taken into consideration. In a cubical room having six equal areas exposed to the occupant, if one of the areas is exposed to the weather an increase of 6 F in the surface temperature of the exposed wall will be equivalent to raising the average surface temperature of the six sides by 1 F. Obviously, the increase in average surface temperature will be larger for rooms having two or more exposed walls. The numerous examples presented earlier in these articles emphasized the fact that the addition of storm sash and insulation to the existing structure will result in a marked increase in surface temperatures of the windows and walls. Such weatherproofing aids will definitely contribute to improved comfort conditions. It is true that panel heating by means of floor or ceiling panels will tend to reduce radiation heat loss from the body to the room surroundings. However, many fail to realize that a similar decrease in radiation heat loss from the body can be accomplished to a partial extent by adequate insulation and the use of double glass.

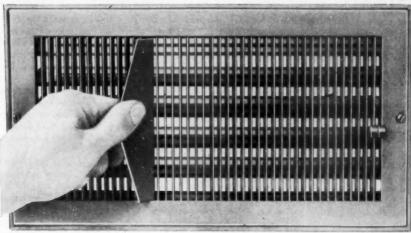
The values shown in Fig. 29 can be used to demonstrate the effects obtained with various wall or window

(To page 164)



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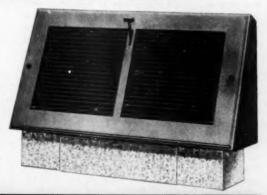
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ERNEST E. ZIDECK

O NE requisite in most sheet metal shops is for benches or horses which can be easily adjusted to varying heights needed to support long assemblies or materials processed through a machine, as in hole punching or drilling. The need is particularly urgent in the production of aircraft, military vehicles, ships and other national defense items, in which quite often full mill lengths of flats, angles and diverse channels must be punched for rivets and bolts. If the long material is not supported properly it will buckle or bend in the area being worked and punches and drills are liable to break. If holes are made in heavy gauge materials in a bent condition, the holes will be crooked and out of alignment.

For conservation of punches and drills and for perpendicular holes through the materials it is necessary to have the strip, angle, or channel so supported at both ends that its face contacting the dies in a punching assembly or a drill point lowered for operation is on a level with same. If the product is a flat strip of metal, benches placed laterally from the machine with their top surfaces overlaid with planks or boards or metal strips to the required height of punch dies or to the height of the bed of a drill press on which the material rests would be a sufficient supporting medium. But if an angle or channel is to be processed on more than one of its flanges, the levels change, and the height of the supports must change with them.

Welded Design

Various attempts had been made in the past, in both smaller sheet metal shops and in factories, to construct benches which could be easily adjusted to varying heights, for support of materials or assemblies worked on at different levels. One version of the adjustable bench or support is depicted, in conjunction with a punching assembly in a press brake, in Fig. 1 of the accompanying drawings. This is welded pipe construction, shown in section in Fig. 4. Legs B-B, which may be terminated by inserts Fig. 4-A, are connected on the top by a pipe G, and by an almost centrally located cross member, consisting of two pieces of pipe D-D, threaded for right and left tee C, which moves freely in the threads. This welded frame is hinged by pipe G

moving freely in sleeve H, to top A, which is made up as shown, of sheet metal 18 or 16 gauge.

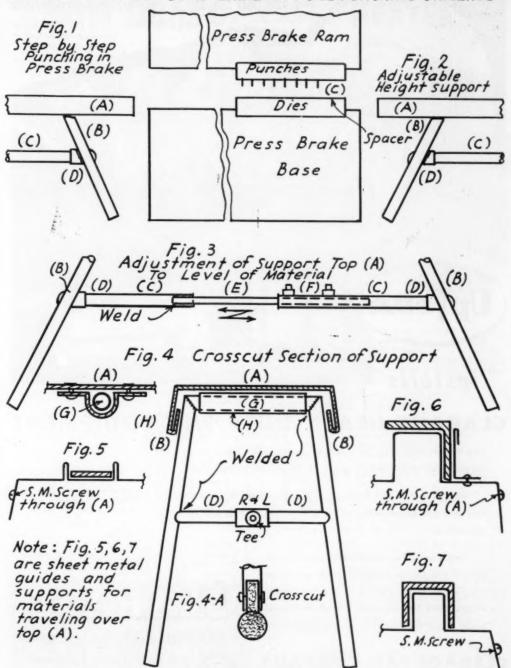
Pipe pieces C cdot C are threaded into the two tees C cdot C, of two identical frames, Fig. 4, or as shown in Fig. 3. A shaft E fitting inside pipe C is welded into one end of C and moves freely in the other pipe C. Nuts F are welded to this pipe, tapped for setscrews, which hold E in any desired position within the pipe. The two frames, Fig. 4, hinged to top A by pipes G cdot C and sleeves H cdot H, and connected by C cdot C as shown in Fig. 3, can be spread out as in Fig. 3, the action resulting in lowering top A. And vice-versa, by moving the frames closer together, top A rises. Thus, different heights of A from the shop floor can be effected, the setscrews F cdot F holding the frames and the top A in position.

Referring to Fig. 1, the two supports at the sides of the brake are shown with tops A-A adjusted level with dies in the brake bed, over which travels materials to be punched in the brake. Only a short assembly of dies and punches is shown here, because long material processed through a brake would have to be punched by stages anyway, and it is more economical to have a short die-and-punch assembly for the work. It should be remarked here that materials thicker than the punch are better drilled, as the punches are liable to break if pressed through such thicknesses. Of interest in this step-by-step punching of accurately distanced holes is the spacer shown in Fig. 10. It is drill rod, bent as shown, slightly tapered and rounded at its ends, for easier entry into holes in the dies. It will be noted in Fig. 1, that two punches are missing at the right in the drawing. The spacer Fig. 10, shortened as needed, is inserted through two holes and dies, to hold the material in position for subsequent hole punching.

Line-up Devices

Long materials are liable to flap from side to side of top A as they are moved by the operator for new alignment in the step-by-step hole punching or drilling. To prevent the pieces from getting out of line with the dies simple sheet metal devices are used, shown in Fig. 5, 6 and 7. If only one width strip is worked on, the device Fig. 5 will hold the strip in position on top A. Device (To page 65)

SUPPORTS FOR LONG MATERIALS IN HOLE PUNCHING-DRILLING





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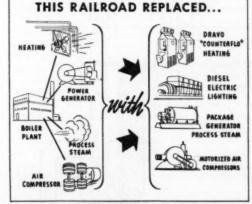




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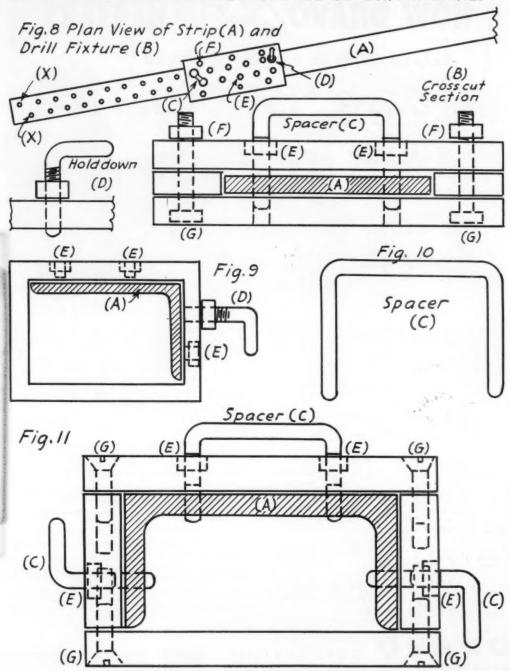
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DRILL FIXTURES TRAVELING OVER MILL LENGTH MATERIALS



in Fig. 6 is for holding an angle in position for drilling holes in it, and device Fig. 7 guides a channel for drilling holes through its body, as shown. Other such inexpensively constructed sheet metal devices can be used for channels drilled in their flanges. The devices can be placed several feet apart upon top A, and bolts through the top may be used, or sheet metal screws through its flanges, as indicated, whichever is the easiest and most economical.

Traveling Fixture

Progressing to Fig. 8, 9 and 11, a traveling drill fixture in several shapes is shown. It is used whenever the material is too long to warrant a one piece fixture, which would be too expensive, and too unwieldy if longer than 4 or 5 ft. The fixture used for drilling strip A in Fig. 8 is only I ft long, but for saving time in shifting it can be longer, with more drill bushings in it than the 10 shown. This fixture B is constructed of steel plates and steel strips as shown in crosscut section marked B. In this view material A is an aluminum alloy strip 1/4 in. thick and 3 in. wide. Steel plates and the lateral steel strips between them are fastened by recessed bolts G-G held tight by F-F. The space resulting from this alignment of plates and intervening strips accommodates strip A, so that the fixture can be moved over it without hemming, but on the other hand allowing no undue play laterally. Holddown D presses strip A against the bottom plate, and this should be sufficient to secure the material B for drilling. As seen in Fig. 8, two rows of staggered holes are being drilled in strip A. Spacer C is inserted through two bushings diagonally. If only one row of holes is drilled, C is inserted in the first two bushings on a straight line.

Sequence

Commencing work on the long strip A, fixture B is placed with one end flush with the end of A, and secured in that position by holddown D. But only the two first holes X-X intended for spacer C are drilled. This done, C is inserted through these holes and then the other holes are drilled. When all holes have been drilled through the number of bushings in B, the fixture is moved forward over A, and is aligned with the two holes drilled last below the two bushings used for spacer C. With C inserted through said holes, the result is the correct spacing of holes since the bushings holding C are spaced the same distance from the next bushings as is the number of them in the fixture. In other words, by inserting C through holes in A drilled through the bushings, fixture B is held in position required for drilling the next holes, which then are spaced as if drilled through any other bushings in B.

Reverting back to Fig. 1, press brake punching, that same situation and relation is present, except that there is no fixture B and holddown D. Strip A is held in position for punching by gages in the machine operating laterally in relation to the strip. Gaging holes in the strip lengthwise is done by spacer C. The first two holes

for accommodating C are layed out and drilled in the strip, near its one end. By anchoring the strip by C inserted through the first two dies, positioned in relation to the dies at left in the drawing, the brake ram holding the number of punches is made to descend and punch the number of holes at the left from C. This done, strip A is moved to the right until last two holes punched in it come to position above the holes in the last two dies. Then C is inserted and another punching operation takes place. Thus, step by step, the whole length of A is punched with holes spaced correctly.

Fig. 9 and 11 relate to traveling drill fixtures built for angles and channels. It will be noted that the fixtures are built in the form of a square tube, with each wall 90 deg in relation to the other wall. This construction facilitates drilling of holes through more than one wall or flange of the material A, shown shaded in its position within the fixture. All bolt heads and bushings, G-G and E-E respectively, are recessed in the steel plates, so that either face of the fixture can lie flat on a drill press bed and its other face, through which the drill descends, is 90 deg in relation to the drill. As seen in Fig. 9, holddown D is operating near the confluence of the two flanges of the angle, where it exerts pressure against the angle without danger of bending the flange.

Hole Locater

Fig. 11 depicts a drill fixture used in aircraft, vehicle and ship building. It is used for locating rivet holes, closely spaced, in the body of a channel, and more widely spaced bolt holes in flanges which commonly connect the upright members of the structure, forming the framework upholding skins or coverings, and also frames for doors and windows. These angles or channels are often full mill lengths, first riveted to the respective bottoms of the structures, and then receiving the aforesaid uprights, in which bolt holes must match bolt holes in the flanges of the securely fastened angles or channels. This circumstance makes it mandatory that the bolt holes in the flanges be located in relation to the rivet holes. In other words, if bolt holes are drilled through that same fixture by which rivet holes are placed, they will be more accurately located than if a separate fixture is employed for rivet holes and another one for bolt holes.

Variations Possible

Granted that the first bolt holes are specified to be drilled 6 in. from the end of the long material, and the next bolt holes 15, 18, or 20 in. from the first holes, the fixture in this case would be long enough to contain bushings for at least two series of bolt holes, (Commonly there are three bolt holes in one connection to an upright member). If the distance from center to center of bolt holes is 15 in., and if the first holes are located from the rivet holes, the two series of bolt holes are drilled at the first location of the fixture, and subsequent holes are distanced by single spacers E, in Fig. 11, inserted through the bushings through which the first holes were drilled. This calls for advance calculation.

Current Control Picture

M-1. Amendment of direction 3 to NPA order M-1 excludes authorized controlled materials orders bearing the "D" allotment symbol from the preference which such orders previously received for iron and steel. The "D" symbol is applied to authorized controlled materials orders placed by the Army's Civil Works Corps of Engineers, the Army's Panama Canal Co., and the Army's Domiciliary building, Old Soldiers Home. Steel producers are now permitted to accept or reject authorized controlled materials orders bearing the "D" allotment symbol on the same basis as other authorized controlled materials orders for civilian production.

M-47B. Order permits flexibility in the use of steel copper, and aluminum for output of consumer durable goods. It allows a manufacturer of products listed in the order to shift his production for any calendar quarter from one product to another in the same group. Controls end-use of the materials listed.

M-47A. To stretch the inadequate supplies of copper and aluminum this order continues its prohibition against the use of either metal for decorating or ornamenting all consumer durable goods and related products not subject to similar limitations under order M-47B.

M.47A has been amended to retain indefinitely the prohibited use provisions of the order in effect during the third quarter of 1951. This order supplements M.47B, which applies only to the products under the jurisdiction of NPA's consumer durable goods division.

M-6A. Requires steel producers to ship a minimum of 100 per cent of average monthly base period tonnages to warehouse distributors on and after Jan. 1, 1952. Base period is the first nine months of 1950. Required monthly shipment of each steel product now going to warehouses is 85 per cent of average monthly base period shipments. M-6A will supersede M-6 on Jan. 1, 1952, when M-6 will be revoked.

NPA Reg. 1. Amendments of the basic order and interpretations 1, 2 and 3 tighten inventory controls. Amend-

ment of Reg. 1 limits inventories of a greater number of products and materials than were covered heretofore, provides a more specific definition of items in inventory to include many materials formerly classified as "in process" and lists in the regulation all existing inventory controls of other NPA orders and regulations. Interpretations 1, 2, and 3 merely change the method of identifying references to portions of the regulation without affecting either the character of the regulation or the interpretations.

NPA ORGERS

M-1. Set-asides of iron and steel castings for rated orders. Monthly set-asides of steel castings range from 75 to 80 per cent of the average shipments in the first eight months of 1950. Galvanized sheets are included in the list of products limited and 80 per cent of production is reserved for rated orders. Lead times vary but 45 days is set in most products.

M-4A-NPA order M-4 was revoked and replaced by M-4A. The new order provides that no person may commence any construction that requires more than two tons of carbon steel, 200 pounds of copper, and any quantity of aluminum, alloy steel, or stainless steel without authorization and allotment of materials. CMP Reg. 6 was amended to halt or prohibit construction on projects that have not been given an authorized construction schedule and related allotment of controlled materials. Dir. 1 to CMP Reg. 6 was issued Aug. 3 and establishes procedure whereby persons may place authorized controlled materials orders and defense-rated orders for construction materials where total requirements do not exceed specified quantities. NPA Del. 14 and NPA order M-74 were amended and NPA Del. 7 was revoked to make them conform with the new construction regulations. Amendment of M-74 adds six items to the list for which use of copper is restricted and revoking of Del. 7 returns processing of construction applications from Commerce Department field offices to Washington.

M-6. Steel distributors. To assure flow of carbon steel products to warehouses steel producers are required to allot and ship each month not less than 85 per cent of a warehouse's base tonnage, including DO orders. Base period for warehouses is Jan. 1 to Sept. 1, 1950.

M-8. Tin. Allows use of pig tin to 90 per cent of average monthly use in first 6 months of 1950 for manufacture of tin plate and terne plate. Inventory restricted to 45 days for most tin products.

M-14. Nickel. Prohibits use of stainless steel and high nickel alloys for all sheet metal building applications.

M-15. Zinc. Restricts use of zinc and zinc products to 80 per cent of average use during base period of first 6 months of 1950.

M-24. Tin plate and terne plate. Limits the maximum permitted coating of tin and terne plate. Some applications restricted.

Dir. 3 to M-1.—This order provides that a steel producer can choose orders he wants, up to 15 days before expiration of lead times. In the remaining 15 days he must take in the order in which they are received all of the authorized controlled materials orders he can fill. Orders accepted before the 15th day prior to end of lead times must not exceed 90 per cent of the steel producer's monthly capacity.

Dir. 4 to M-1—Provides for a transition to a full CMP in the fourth quarter of 1951. It reserves the former free area steel products for makers of consumer durable goods and passenger automobiles and holders of unrated orders which have been converted to authorized controlled materials orders.

M-47A

An end-product producer's maximum use of steel, copper, and aluminum will be specified either by his CMP allotment, or if he does not receive an allotment, by the classification of his product under M-47A, except for copper used in building materials, which will be handled separately.



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Provisions include:

- Copper and aluminum end-use limitations are added to existing steel limitations in M-47A.
- Products on M-47A's list are allowed consumption of 70 per cent of steel, 60 per cent of copper, and 50 per cent of aluminum, figured on January-June 1950 base period.
- Establishment of a new list B in which consumption of steel, copper, and aluminum is set at 85, 80, and 75 per cent respectively, of permitted use during the first quarter of 1951.
- Relaxation of prohibitions on nonoperational use of copper and aluminum in items covered by M-47A, and.
- Transfer of the point of control of copper and aluminum from the fabricator to the firm which produces or assembles the end-product.

Steel use percentage calculations will be made upon the amount of steel used by the manufacturer in making products during this base period within an item classification of list A and B. Copper and aluminum percentages continue to be based upon a company's use of copper or aluminum for making all products in the base period.

CPR 34

This regulation requires the service establishment to file with the local OPS office the schedule of its charges for services performed. The ceiling price is the highest charge made during the base period of December 19, 1950 to January 25, 1951. This ceiling price list should be posted where the public can inspect it.

Application of this regulation to the warm air heating and sheet metal contracting industry is principally in regard to hourly charges for labor in the service branch of the business. Any established services such as filter replacement or oil burner service are controlled by this regulation.

CMP REGULATIONS

Regulation 1—sets up the basic rules of operation for the Controlled Materials Plan. It explains how steel, copper, and aluminum will be allotted to manufacturers of defense and defense-supporting industries.

Regulation 2—establishes inventory limitations on controlled materials. Carbon steel, alloy steel, and stainless steel are limited to a 45 day inventory. Copper, copper-base alloys, and aluminum are limited to a 60 day inventory.

Regulation 3—establishes the relative preference status of delivery orders for controlled and other materials needed for production of goods deemed essential to the re-armament program and the general economy.

Regulation 4—describes the rules under which distributors may make deliveries under CMP.

Amend. 2 to CMP Reg. 1—To eliminate improper scheduling methods the NPA amended CMP Reg. 1 to make it clear that a mill may not accept an authorized controlled materials order if it cannot be filled during the calendar quarter for which it is valid, unless it is revalidated for a subsequent quarter.

Reg. 1 states that a controlled materials producer who is not required or is unable to accept an order for delivery in the month specified by his customer, but has open space on his schedules during the next two months, must accept the order and fill it as soon as possible if this is satisfactory to the customer.

The amendment emphasizes that if this would mean delaying delivery (from the third quarter to the fourth quarter, for example) the order may be accepted only if the customer certifies that he holds an allotment valid for the fourth quarter. In such case the customer must charge the delivery to his fourth quarter allot-

Dir. 1 to CMP Reg. 1-gives manufacturers whose operations fall under the Controlled Materials Plan but who use only small quantities of steel, copper, and aluminum in their production a simple method of obtaining needed supplies of those three materials, without applying to the government. Direction 1, states that a producer of a class B product not marked with an asterisk in the Official CMP Class B Product List need not apply to NPA for controlled material if his quarterly requirements for its manufacture, and the manufacture of all other items in the same product class, do not exceed the following amounts of any of these materials: Carbon steel (including wrought iron), 5 tons; alloy steel (except stainless steel), 0.5 ton; stainless steel, none; copper and copper-base alloy brass mill products, copper wire mill products, copper and copper-base alloy foundry products and powder, 500 pounds; and aluminum, 500 pounds. Direction 1 authorizes him to use the allotment symbol SU (smaller user) on delivery orders for controlled material within the limits set. The quantity of B products he can turn out with the material so obtained, plus that in his inventory, will constitute his authorized production schedule. A producer who qualifies for this procedure is also authorized by the direction to apply the rating DO-SU to orders for production materials, other than steel, copper, and aluminum, required to complete his schedule.

Dir. 2 to CMP Reg. 1—Authorizes producers of controlled materials to apply the rating of DO-PM to orders for production materials (other than steel, copper, and aluminum) for use in producing controlled materials.

Dir. 3 to CMP Reg. 1—No manufacturer whose quarterly allotment or advance allotment of carbon steel is equal to or more than a carload lot shall be required to reduce his delivery order for such material below a carload lot. He may order the full carload despite the fact that the amount may exceed the total permitted in one month under Dir. 3. This direction also prohibits any manufacturer from ordering for delivery in one month more than 35 per cent of his total quarterly allotment of any controlled material.

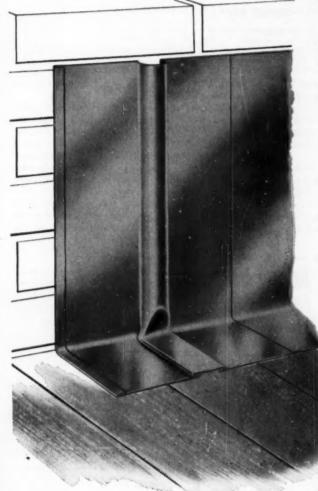
Dir. 4 to CMP Reg. 1—Metal fabricators who acquire title to foreign-produced steel before it arrives in the United States may use it to augment their authorized production schedules under CMP. The new direction stipulates that no copper or aluminum controlled materials above a manufacturer's allotment of these metals may be used in connection with an augmented production schedule.

Dir. 5 to CMP Reg. 1—Stipulates that if a purchaser, through no fault of his own, did not receive the full amount of controlled materials originally ordered for third quarter delivery, this undelivered amount shall not be deducted from his fourth quarter allotment. If a purchaser placed an order in the third quarter for delivery in the fourth quarter, he must deduct the amount of such materials from his fourth quarter allotment regardless whether they were obtained by an authorized CMP order, a rated order, or an unrated order.

CMP Reg. 5 replaces NPA Reg. 4 and provides for the acquisition of maintenance, repair, and operating supplies under the controlled materials plan. CMP Reg. 7 does the same for parts and materials needed by repairshops. Both of the new regulations provide self-allotment procedures to obtain materials. No application to NPA is required.

Under CMP Reg. 5 any business enterprise may obtain the normal amounts of steel, copper, aluminum, and other materials needed to keep its plants and property in repair and operation, and to make minor capital additions. The allotment symbol DO is authorized as well as the symbol DO-MRO.

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CITY

Fundamentals Of Sheet Metal Practice

PART IX

CHARLES SEEL

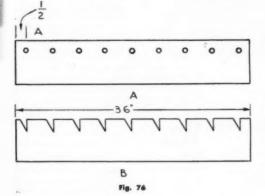
Alexandria, Va.

S ELECTING the correct size and type of rivet is the first step in riveting a cross joint. It is also important to punch the proper size hole and specify the correct hammer and rivet set. The stake or bar used to back up the rivet should have the proper contour face and be solid enough to provide adequate resistance (take the shock).

Selection of rivet and spacing of holes is another of those questions which is subject to considerable debate and is generally a matter of local custom. Shops do not carry every size of tinner's rivets, but have an assortment of 1, $1\frac{1}{2}$, 2, 3, 4, 6, 8, and 10 lb flat head rivets. Following is a sample table showing approximate gauges, rivet size, hole size, and proper rivet set.

Metal gauge	Rivet	Hole (in.)	Set size
30	12 oz	7/64	8
28	1 lb	1/8	7
26	11/2 lb	9/64	6
24	2 lb	5/32	5
22	2 lb	5/32	5
20	3 lb	11/64	4
18	4 lb	3/16	3
16	5 lb	3/16	3
14	6 or	7/32	2
	8 116	1/4	1

Where the rivet is to bind three or four thicknesses of metal the next larger size is used above those listed in the table. This is true unless there is a rivet available



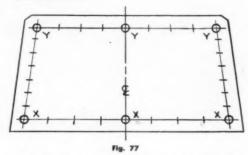
with a longer shank, which is not the case when flat head tinner's rivets are used.

The spacing of rivets for either longitudinal seams or cross joints is another topic for debate. Many mechanics use a pair of wing dividers locked at 3 in. for spacing rivets in longitudinal seams. Others have a strip of metal 36 or 48 in. long with 1/16 in. holes spaced along a ½ in. marginal edge. Fig. 76 a. These holes are prick punched into the pattern. Others use a strip of metal with notches at each space. Fig. 76b.

When working in a shipyard we had a strip 48 in. long with holes at 1½ in. centers which was used with good results on ducts 5 to 6 ft long, whether round, flat oval, or rectangular.

Hole Should Be Exact

The essential factor in laying out the holes in a longitudinal seam, no matter what the shape of the duct, is that the holes on both sides be opposite each other and square with the center. If this precaution is not observed there will be a wind or twist to the duct when the seam is riveted.



This twist is not generally so noticeable in round work, but if it should occur in square, flat oval, or rectangular ducts new holes will have to be punched. The first hole in a longitudinal seam is usually one half the width of the cross joint from the edge of the sheet and one half the width of the longitudinal seam from the end. After laying out the large and small ends of a round pipe, a punch mark is made at the three points on both ends as noted at x for the large end and y for the small end

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in Fig. 77. The rivet holes at the large and small ends should be parallel to each other and square with the center line.

Starting at x on each side the holes are spaced as determined by the dividers or strips mentioned previously. Should the space from the last hole to y be smaller than the other spaces it is left that way because it is not necessary for each space to be equal at this point. The spaces on the cross joints however must be equal in number and spaced accurately. A mark at the center of the sheet makes it a simple matter to space each way from the center joint. By using bisectors and halving the distance each time, an even number of spaces can be marked which will assure the rivet holes being perfect matches. While the number of rivets will vary there should never be less than four in a cross seam.

Reference to the table on cross joints will show that some circumference rivet requirements are divisible by four. This is good practice because the spaces can be laid out by bisecting. Those requiring six or ten rivets, while making use of the center line must be spaced by approximating the distance of each space until the spaces are even.

Where an odd number of rivets is required the spacing is more difficult and the center line cannot be used.

The number of holes in a cross joint is always one more than the number of rivets, because of the lap. This point seems elementary but it is not always understood by beginners.

The use of a narrow strip of metal with hole spacings for large and small ends of round pipe is good practice. Where there are elbow patterns at hand with large and small ends laid out these can be used to mark off the straight pieces.

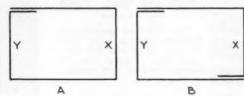
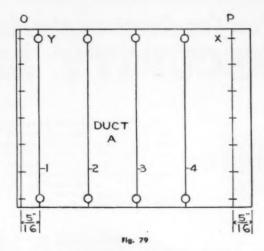


Fig. 78

The longitudinal seams in flat oval, square, and rectangular ducts are spaced the same as for round pipe when the seam is centered. For square or rectangular ductwork the seam is sometimes located at one corner or at two opposite corners. In Fig. 78 it can be seen that in a the side at x will be made a little wider than at y to conform to the thickness of the metal used. In b both sides are the same.

When spacing the holes for a 5/8 in. longitudinal seam the distance of 5/16 in. is measured from the line at o and the same distance from P. This will prevent the edge at P from projecting past the corner. Fig. 79.

The duct shown in Fig. 78b would be made in two halves as discussed in previous articles. If it is necessary to make one end of the duct smaller than the other



the pattern can be adjusted. This is rare except in the case of an elbow with welded corners.

Marking Holes

To lay out rivet holes for the cross joint in square or rectangular duct connecting with an elbow begin at the center of each side on the large end and space off on a line drawn in from the edge a distance equal to one half the cross joint (½ in.).

These holes are punched in the large end, the elbow inserted the required distance (1 in.), the two pieces lined up, holes marked, the elbow removed and holes punched in the small end. Marking the adjacent sides of each piece will be a great aid in joining the sections.

When flanges are installed the holes are punched or drilled in the flanges, transferred to the section of duct and the adjacent edges marked as above.

The practice of marking off from the center of a sheet proves effective where screens or baffles are to be fastened on the inside of a duct. This is particularly true when clearance is to be allowed around the screen. It can

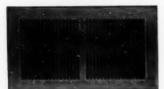
Cross Joints

Diameter (in.)	Circumference (in.)	Number of rivets	Approximate spacing (in.)
4	12 9/16	4	3 1/8
5	15 3/4	4	3 15/16
6	18 7/8	6	3 1/8
7	22	6	3 5/8
8	25 1/8	6	4 3/16
10	31 3/8	8	3 7/8
12	37 11/16	8	4 11/16
14	44	10	4 3/8
16	50 1/4	12	4 3/16
18	56 1/8	12	4 5/8
20	62 13/16	12	5 1/4
24	75 3/8	16	4 3/4
30	94 1/4	16	5 7/8
36	113	16	7 1/16
40	125 11/16	24	5 1/4
42	132	24	5 1/2
48	150 13/16	24	6 1/4

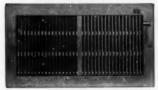
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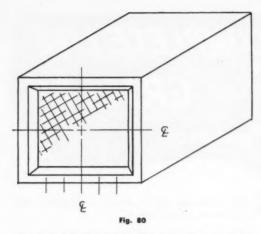
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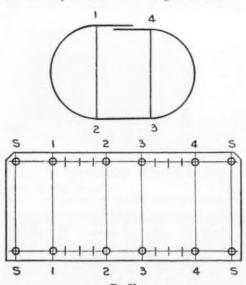
be seen in Fig. 80 that if the holes in the duct are evenly spaced from the center line, centering of the screen will be automatic.

When flat oval ducts are made with a taper the points at 1, 2, 3, and 4 are sometimes used as terminal points for marking rivet holes and the flat sections spaced separately. Fig. 81.

Application of flanges to flat oval pipe calls for the same technique as discussed for square duct.

Punching Rivet Holes

After selection of the proper size of rivet and marking the sheet for rivet holes the next step is to make the necessary openings. There are a number of alternate ways in which this can be done. The holes can be made with a solid punch and hammer using a wooden block



as backing. It is also possible to use a hand punch, lever punch, or power punch for the holes. They may also be drilled to the correct size.

The old time stump and solid punch method was faster than most moderns realize. The sheet was balanced on a stump with the inside uppermost and the holes made with a solid punch and a ball peen hammer or heavy riveting hammer. The resulting burrs were not flattened out, making insertion of the rivets easier.

The modern day method is to punch rivet holes with a hand or lever punch.

To use a hand punch the sheet is placed on the bench with the inside uppermost and the amrked holes extending over the edge of the bench. Hold sheet in place with weights if necessary. See that the punch enters the die about 1/16 in, a better rivet hole will result.

The punch has a centering point so it is not necessary to sight the holes. The center point of the punch will

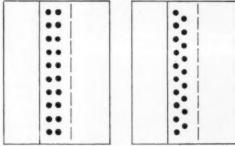


Fig. 82

drop into the center punch mark and the hole is made. There will be a slight burr, but it is not necessary to flatten this. This method applies to both hand and lever punches.

Stand For Punch

Many manufacturers furnish a stand or base in which the punch can be fastened in a rigid position. Where this method is used the holes are punched out the same way but the sheet is moved about.

Some shops make portable stands for the lever punch. A base is made of steel plate and a short section of pipe welded to the base at a 60 deg angle. The lower handle of the punch is inserted in the pipe and held in place by two set screws. The stand is clamped or screwed to the bench.

The practice of clamping a punch in a vice is not to be recommended because the punch handle soon becomes battered and dangerous.

Since four or more holes can be punched in the time that it takes to drill one, punching is the preferred method. When holes are drilled the best way to remove burrs is to change to a larger size drill, reverse the sheet and touch each burr with the drill. Filing the burrs down is too expensive and time-consuming.

When countersunk rivets are specified for butt straps



the holes are drilled and countersunk in one operation. This is done with a center drill which drills the hole and countersinks it to fit the rivet.

When the head to be riveted is to fill a countersunk hole for a smooth finish, the hole is countersunk on the outside and after riveting, the head is filed or ground down.

Doubling Up

It is sometimes necessary to place a double line of rivets in a piece of work. These may be arranged in line or staggered. When placed in line, one line of holes is laid out and the second row marked off from the first. When the holes are to be staggered, one line of holes is marked and the second started at one half the spacing of the first. Fig. 82. The holes are punched as discussed.

Riveting

Now that the preliminary steps have been completed it is possible to consider the actual riveting of the work.

Round pipe should be riveted on a round stake or section of round shafting. Flat oval, square, or rectangular pipe should be riveted on a flat stake or track. The more solid the stake used to back up the rivet, the better the finished work will turn out.

On round work the pipe is placed on the curved stake or bar with the proper side of the seam uppermost so that all the seams may be lapped the same way when there are a number of sections to be made. Where one side has been curved slightly before rolling that side should be kept on top. A rivet is then inserted at each end in the hole next to the end, leaving the final holes open.

Use of Rivet Set

Place the rivet set over the shank of the rivet and strike the set two or three blows with the hammer in order to flatten the metal around the rivet and to draw the laps together. The rivet set is then removed and the rivet flattened with the hammer so that the head will be about the size of the countersunk part of the rivet set. The rivet set is then placed on the rivet head and the set

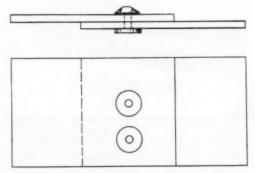


Fig. 83

struck two or three times to produce a rounded or mushroom shaped head. A good rivet head will always show a flat surface at the top about the size of the shank of the rivet used. Fig. 83. Care should be taken to hold the rivet set at a right angle to the pipe at all times to prevent nicking or marring the metal. The laps should always be drawn and held tightly together when riveting.

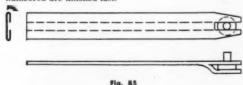
After the end rivets have been secured, the pipe is moved to allow the insertion of a rivet in the center of the pipe. After this rivet is headed the next one will be one half the distance between the end and center of the pipe. This procedure is followed for the remainder of the rivets. It is not advisable to go down the line setting the rivets successively.

Mismatched

When there are holes that do not match, skip them and leave them unfinished until all the rest are done. The mismatched holes can be centered by using an electric drill. Otherwise they can be drawn up by placing the countersunk opening of the rivet set over the rivet and hammering to produce a raised point which will pierce the sheet and then finishing the rivet. In light gauge work this method of drawing up a rivet can be used where there is no hole in the sheet.



Some mechanics will insert three or more rivets and then complete them one at a time working near the end of the bar to assure solid backing and prevent interference. Fig. 84 shows the numerical sequence of riveting when halving the distance each time. The holes not numbered are finished last.



There are times when the pipe is too long to allow the mechanic to reach in to the middle to insert a rivet. In this case a jig, sometimes called a rivet stick is used. This stick is made from a strip of metal 1 in. wide with a 3/16 in. hem on each side for rigidity. One end is slotted to conform to the size of the rivet. This slot is made approximately ½ in. long. The rivet is held in an offset in this end of the stick. Fig. 85. The stick is inserted in the pipe and moved about until the rivet is sighted through the hole. The shank is then placed in the hole and the stick withdrawn by a quick movement.

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piece of work according to his own methods and without being subject to the control of his employer except as to the result of the work and a subcontractor is one who takes a portion of the work from a principal contractor or from another subcontractor."

In addition to this distinction between an employer's liability for the negligence of employees and freedom from liability for the acts of independent contractors, there is another equally important distinction in the withho'ding of social security taxes from wage payments to employees and the fact there is no such withholding from payments to independent contractors.

Suit For Refund

An instance of this character came before a federal court in Louisiana when a suit was brought for the refund of social security taxes paid under a levy made by the collector of internal revenue in that state.

Two branch stores had been conducted for some time by a company in Shreveport in that state and the manager had received as compensation 15 per cent of the business handled. The employer furnished delivery facilities, paid the rent, established the work hours and made periodical checks on the stores.

Later the 15 per cent commission was increased to 30 per cent and the former employee took over the entire management and control of the stores, paying his own rent and delivery cost, assuming the credits extended customers, setting his own opening and closing hours and absorbing whatever losses occurred.

The company however, continued to deduct the social security taxes from this 30 per cent commission, as it had under the previous arrangement, for between three and four years. Then it sued to recover these tax payments made under the later arrangement when the full control of the store had been assumed by the employee in consideration of the increased commission.

Here the liability for the withholding of these taxes like the liability for negligence, was determined entirely by the relationship, whether that of employer and employee or of owner and contractor.

The definition of an employee under the treasury regulations is that this relationship exists when the person for whom the services are performed has a right to control and direct the employee, not only as to the result to be accomplished but as to the means and details by which it is accomplished. "That is, an employee is subject to the will and control of the employer not only as to what shall be done but how it shall be done." If an individual is subject to the control or direction of another merely as to the result to be accomplished by the work and not as to the means and methods for accomplishing the result, he is an independent contractor.

In rendering judgment against the United States for a refund of these social security taxes, which had been illegally collected, the federal court said.

"It has been generally held and accepted that if the one hired is subject to the control of the hirer as to the means, methods and details of performance, he is said to be an employee whereas if he is subject to the control only as to the result to be accomplished and the mode and manner of performance are matters of his own discretion, he is an independent contractor."

The law for this decision had been laid down two years before by the Supreme Court in a case in which a freight motor carrier contractor for the pick-up, loading, and delivery of goods by individual motor truck owners in different states. These truckmen did their own hauling and personally drove their own trucks. Operating costs were borne by the truckmen while the permits and licenses were supplied by the company.

The company was assessed by the collector of internal revenue for social security taxes on the payments made to these truckmen. The company paid the taxes and then sued for their recovery.

No Liability

In its determination of the case the federal circuit court of appeals said, that the company could not be held liable for the employment taxes on the wages of persons over whom it exercised no control and of whose employment it had no knowledge. That this element of the control of the truckmen over their own laborers went far to prevent the employer-employee relationship from arising between them and the company. "We think it cannot be said that a truckman to whom is left the determination of whether to do the work himself or engage others to do it is a mere employee," concluded that court.

The Supreme Court in affirming this judgment rendered a decision that has since served as authority in determining whether or not this employer-employee relationship existed, with the consequent liability of the employer for the withholding of social security taxes.

"As the federal social security legislation is an attack on recognized evils in our national economy, a constricted interpretation of the phrasing by the courts would not comport with its purpose. Such an interpretation would only make for a continuance to a considerable degree of the difficulties for which the remedy was devised.

Of course this does not mean that all who render services to industry are employees. Obviously the private contractor who undertakes to build at a fixed price on cost-plus a new plant on specifications, is not an employee of the industry thus served nor are his employees."

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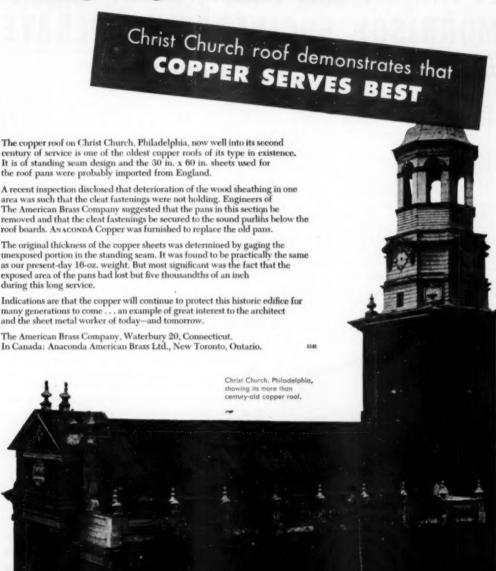
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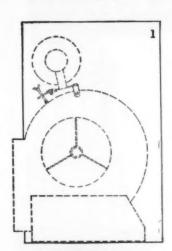
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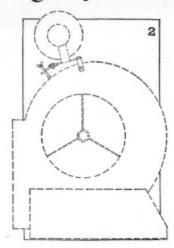
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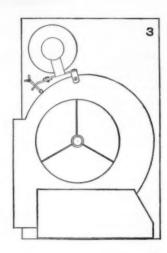


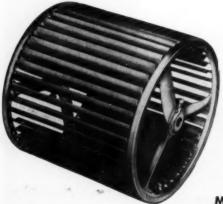
for better sheet metal work... use ANACONDA COPPER

A Graphic Case History Shows how MORRISON ENGINEERS COOPERATE in Custom Design of Blowers









*Write for copy of . Morrison catalog 503, 28 pages of engineering data.

company designed and set up total physical dimensions for the entire furnace. After installation of the heating unit, there was only so much space left. The problem-to obtain a blower that would fit the space. Above drawings show how Morrison handled the problem.

Figure 1 shows a Stock 10" Blower that fits into space but with capacity of blower too small, Figure 2 shows Stock 12" Blower where blower capacity is sufficient but overall dimensions of blower casing are too large to fit space limitations. Figure 3 shows 12" wheel in Custom Designed Housing by Morrison to meet your requirements and obtain sufficient blower capacity.

Morrison engineers design and test blowers to fit. You can purchase squares and nibble scroll sides to design developed by Morrison engineers . . . or Morrison will nibble and furnish these specially designed sides.

MORRISON PRODUCTS, INC. 16816 Waterloo Road Cleveland 10, Ohio



Indiana

A RECULAR QUARTERLY MEETING of the Sheet Metal and Warm Air Heating Contractors' Association of Indiana was held in Hotel Roberts, Muncie, Friday evening, Oct. 18, 1951. Registration of contractors and suppliers reached 78.

The meeting was opened by V. Hazelton, chairman of the committee on arrangements, with a speech of welcome. He then introduced Lawrence O'Donnell, Vincennes, president of the state association. President O'Donnell thanked the group in attendance, complimented the Muncie committee, and presented the first speaker.

John R. Scheel, engineer with the Central Indiana Gas Co., discussed automatic heat with gas fired equipment. His talk on installation, care, and servicing of gas fired heating equipment was well received.

Ed Carter, publisher of *Snips* magazine spoke on the confusion which has arisen in the industry from the efforts of the government to control materials.

William E. Garber, Jr., past president of the association and vice president of the Building Congress of Indiana, emphasized the need for trade groups and the value of contractors working together.

A buffet luncheon and refreshments brought the event to a close.

Detroit

DURING THE MONTH of October the Detroit Warm Air Heating Association presented a free school in oil burner service and installation. The school was presented in three sections of four meetings each.

This activity was sponsored by the association in cooperation with Socony Vacuum Oil Co., L. A. Peters Distributing Co., Minneapolis Honeywell Regulator Co., J. L. Gillen Co., and C. A. Olsen Manufacturing Co.

New Haven

AT A MEETING held recently at the Hotel Garde in New Haven, the Greater New Haven Oil Heat Association was organized. The advantages of such an association were outlined in an address given by Fred H. Beckwith, executive secretary of the Oil Heat Institute of New England, Boston, Mass. Also as guest speaker was William Briggs of the Valley Oil Co. in Middletown, Conn.

The meeting was conducted by Mitchel Landau of the

Oil Equipment Center in New Haven, who was later voted temporary chairman pending the election of permanent officers. The association has selected the second Monday evening of each month for their regular meetings.

The following companies and individuals were represented at the initial meeting: DeMusis Bros., Inc., Michael DeMusis, Peter DeMusis, Charles DeMusis; Hendricks Heating Co., Inc., James J. Buchanan, Norton H. Bradley; Bell Pump Service Co., Anthony M. Kablik; Berkshire Ice & Fuel, Louis Selinsky; Elm City Filling Stations, A. N. Alderman; Charles A. Esposito; Walter H. Duenkel; Excel Fuel Co., Salvatore J. Guzzio; Gaseco Equipment

COMING EVENTS

Dec. 3-4—National Heating Wholesalers' Association, Annual Meeting, Hotel Statler, Cleveland, Ohio. E. L. Wyman, Executive Secretary, 609 Commerce Building, Cleveland.

Dec. 5-6—National Warm Air Heating and Air Conditioning Association, 38th Annual Convention, Hotel Cleveland, Cleveland, Ohio. George Boeddener, Managing Director, 145 Public Square, Cleveland.

Jan. 20-24, 1952—National Association of Home Builders, 8th Annual Convention and Exposition, Stevens and Congress Hotels, Chicago, Illinois, Paul S. Van Auken, Convention Exposition Director, 111 W. Jackson Blvd., Chicago.

Feb. 7-8, 1952—Sheet Metal and Warm Air Heating Contractor's Association of Indiana, 34th Annual Convention, Hotel Severin, Indianapolis. Frank E. Anderson, Secretary, 439 S. 17th St., Terre Haute.

Feb. 11-13, 1952—New York State Sheet Metal, Roofing and Air Conditioning Contractors' Association, Annual Convention. Ten Eyck Hotel, Albany. Clarence Meyer, Secretary, 567 Genesee St., Buffalo, N. Y.

April 21-23, 1952—Sheet Metal Contractors Association of Illinois, Annual Convention. Abraham Lincoln Hotel and Exhibit at Elks Club, Springfield. E. A. Schmidt, 1210 E. Laurel St., Springfield.

SKUTTLE HUMIDIFIERS offer you and your customers scientifically engineered humidity to meet the needs of any warm air heated home.

First, they are designed to do an adequate job, provide humidity 24 hours a day. Second, they are designed to stand up under all water conditions. Pans and float chambers are vitreous enameled steel. Floats are blown glass—corrosion resisting materials are used throughout. Third, they are designed for easy installation. You can install one in 40 minutes or less.

You can depend on Skuttle Humidifiers to please your customers, to sell easily and in profitable volume.

SKUTTLE SERIES 600 HUMIDIFIER (Patents Pending)

Self-flushing, self-cleaning, self-draining, Skuttle Series 600 holds 5 to 20 evaporating plates—adequate for oil or gas fired warm air furnaces or winter air conditioning plants up to 180,000 BTU.

Adjustable bracket permits easy installation in straight or sloped plenum. Flush lever provides automatic cleaning.



SKUTTLE SERIES 300 HUMIDIFIER

Holds up to 40 evaporating plates. For large homes,

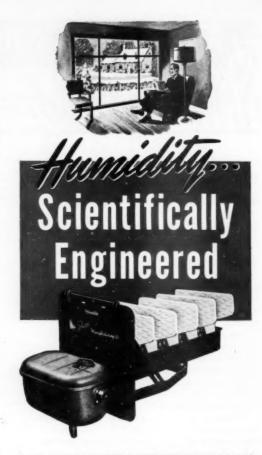
SKUTTLE SERIES 500 HUMIDIFIER

Pan type, without plates. For coal fired warm air furnaces.



VAPOGLAS EVAPORATING PLATES (Patented)

The best plates obtainable. Made of glass fiber, compressed after heating. Absorbs 70% more water, pound for pound than any other type plate.



For Better Selling

Skuttle Humidifiers are extensively advertised in daily papers in season.

In addition we offer your

Consumer Folder "The Story Of Humidity"—Complete—altractive—powerful convincers for your prospects.

Counter or Window Display—Hard hitting—printed in the wonderful new "Day-glo" color.

Sales Manual—with complete sales program.

Attractive Decal for Your Door or Window.

Vapoglas Plate Dispenser and a Colorful, Attractive Counter Display.

See your jobber about Skuttle Humidifiers.
Selling them is profitable, satisfactory.



BEAUFAIT AVE. . DETROIT 7, MICH.

Co., Nickolas J. Pelliccio; Shubs Coal & Oil Co., Maurice A. Shubs; Modern Equipment Corp., George B. Sprick; Crystal Oil Co., Harry Ginsburg; Mattys Oil Co., Matty Casanova; Anthony Tarini; F. C. Raines & Son; Oil Equipment Center, Arnold J. Alderman, Mitchel Landau, Sidney J. Horton, Irving Marinoff, Jerry Rifkin; City Fuel Co., Hamden, Archie Arons, J. M. Katz; Virsal Oil Co., Hamden, Irving Salovitz, William Virshup, Jack Henkin; Connecticut Refining Co., West Haven, Irvin A. Shiner; United Fuel Dealers, Inc., West Haven, Frank Pagliuca, Charles Dekas; Johnson Brothers, East Haven, H. Shepard Johnson, Jr.; Palmer Oil Co., Woodbridge, Peter Palmer.

Home Builders Show

THE 8TH ANNUAL convention and exposition of the National Association of Home Builders will be held in Chicago, January 20-24, in the Stevens and Congress Hotels.

The popular builders' conclave is expected to attract a record turnout in view of the many knotty problems facing the building industry and the boom in association membership. More than 6,000 new members have joined NAHB since the 1951 convention last January.

Joseph B. Haverstick, prominent Dayton, Ohio builder, will head the convention committee and supervise the development of the convention program. He has served as a member of the convention committee for several years.

Mr. Haverstick has announced that convention sessions will include comprehensive coverage of all important national issues affecting the building industry as well as a wide range of activities devoted to the technical and business problems of the individual builder.

Of equal interest to the thousands of builders, contractors, architects, building supply dealers and others from the industry will be the huge exposition of the latest in building materials and home equipment.

Convention-exposition director Paul S. Van Auken has announced that the exposition has already established two new records. The exhibits will occupy the largest area of any NAHB show to date, and the exposition was a sellout on the initial assignment of space on September 15, over four months in advance of the opening.

Los Angeles

THE REGULAR MEETING of the Institute of Gas Heating Industries was held on Thursday, Oct. 11, 1951 with President Haldeman presiding.

After announcements of the various committees a surprise presentation was a color film obtained from the Atomic Energy Commission. This film showed the operations at the atomic tests made at Eniwetok atoll in the Pacific.

Next on the program J. A. Stone and Peter Root of the American Gas Association spoke on the AGA Testing Program and What It Means To The Gas Heating Industry. The speakers presented the various phases of testing gas fired heating equipment before it earns the approval of the AGA laboratory.

Canadian Chapter

A MODERN STREAMLINED PROGRAM is being planned for the 1952 Indoor Comfort Conferences sponsored by the Canadian Chapter, National Warm Air Heating and Air Conditioning Association. The use of blackboards is being discontinued in favor of a daylight projector called the Vu-Graph. This projector allows the use of previously prepared material and still makes it possible for the lecturer to make sketches and calculations which can easily be seen by the entire group.

The schools will be of five day duration and the schedule is:

Quebec City, P.Q., Jan. 7 to 11 Amherst, N.S., Jan. 14 to 18 Toronto, Ont., Jan. 21 to 25 London, Ont., Feb. 4 to 8 Hamilton, Ont., Feb. 11 to 15 Vancouver, B.C., Feb. 25 to 29 Calgary, Alta., March 3 to 7 Saskatoon, Sask., March 10 to 14 Winnipeg, Man., March 17 to 21 Kitchener, Ont., March 31 to April 4 Ottawa, Ont., April 14 to 18 Montreal, P.Q., April 28 to May 2

1952 Indoor Comfort Conferences

THE NATIONAL WARM AIR Heating and Air Conditioning Association has announced the preparation of a brand-new Indoor Comfort Conference program for the 1952 season. Featuring the slogan "It's All New For '52" the association is presently scheduling a number of these two-day warm air heating engineering and sales schools for the first four months of 1952.

Highlighting the conference program will be the new perimeter warm air heating concept of replacing heat that is lost, at the point where it is lost, as fast as it is lost. Equally suitable for both concrete slab and crawl space construction, perimeter heating is rapidly being accepted as the best method for achieving Indoor Comfort in basementless structures, as well as improving heating results in structures having basements. New design and installation suggestions for these applications will be revealed. Included among these applications will be the perimeter lateral system for basementless structures built on concrete slabs. The perimeter heating applications for structures over crawl spaces will include radial systems, plenum, and extended plenum duct systems.

Of particular interest to heating men and gaining momentum in sales is the high velocity heating system using small warm air ducts. To provide those who attend the 1952 conferences with information on the theory and design of small duct systems, special material including duct sizing tables are being prepared for distribution to those attending.

Once again Guy A. Voorhees, technical secretary of the national association will be the instructor for the conferences.

EQUIPMENT DEVELOPMENTS

Indoor-Outdoor Control

AUTOMATIC DEVICES CO., INC., Western Springs, Ill. An outdoor temperature reading in combination with a measuring bulb in the heating system changes the rate of heat flow with every change of the weather in anticipation of the heating needs of a building. A built-in fan switch which provides a continuous regulated flow of heat eliminates lags caused by overshooting and undershooting. This assures constant, uniform comfort at the desired temperature from the least amount of fuel.

The control is completely adjustable on the job for a range of design temperatures, temperature ranges, and minimum and maximum cutoff points which make it a universal unit for a variety of applications. Ease of adjustment is assured by dial markings on four dials calibrated in actual temperature settings.

Weather-Flo is tamper proof, easy to install, and designed for operation with all fuels in all heating systems including radiant panel systems.

Priced for single family residence it is also suited to the multiple family occupancy building. AA 149





Above: Temperature Controller Left: Oil or Gas Fired Furnace

Oil or Gas Fired Furnace

HALL-NEAL FURNACE CO., Indianapolis, Ind. A new gas or oil fired furnace may be installed seven different ways. It may be furnished as an oil or gas fired highboy, an oil or gas fired counterflow unit, an oil or gas fired basement model or an oil fired suspended unit.

It has a bonnet delivery of 120,000 Btu with either gas or oil. Tested and approved by AGA.

As a highboy the filters may be located on any of three sides, with a special rack underneath for a bottom inlet. As a counterflow furnace for perimeter or crawl space heating, the blower is assembled on top of the unit. When installed as a basement model, the blower compartment is placed beside the furnace. In the suspended position, the unit is oil fired only and blower compartment may be assembled at either end. Burner mounting plate, being square, is merely rotated 90 degrees when unit is suspended. Oil burner is a high pressure, gun

type, and gas burner is an upshot, single port type.

Unit measures 30 in. deep, 30 in. wide and 71 in. high in highboy or counterflow position. Basement model is 48 in. high.

Where gas is temporarily restricted unit may be installed as an oil furnace. By changing burner and mounting plate when gas is available, it becomes AGA approved gas furnace.

AA 150

Humidity Indicator

FEE AND STEMWEDEL, INC., Chicago, Ill., announces a new direct reading hygrometer which is being used extensively by the U.S. Armed Services and is now available for general industrial use. This instrument provides a simple means for keeping constant and accurate check on the relative humidity. Easy to read as a clock and reasonable in price. This new addition to the Airguide weather instrument line is suitable for use in many types of manufacturing, warehouses, testing laboratories, and other commercial concerns where it is essential to maintain constant humidity.

AA 151





Interval Timer

Humidity Indicator

Interval Timers

TORK CLOCK CO., INC., Mount Vernon, N.Y., announces a revised line of single set interval timers for commercial and industrial service available for either permanent installation or portable use with cord and plug.

Portable plug-in models are rated 6 and 15 amperes. A single pole, single throw, normally open switch is timed and powered by a self-starting motor. Switches have heavy duty contacts for either 20 or 30 amperes.

Timing interval is easily set by turning indicator knob on plainly marked dial. Various time cycles are available ranging from 60 minutes to 24 hours. Models provide selective switching where complete automatic control is impractical. Pilot lights, a signal circuit, bypass switch, stop switch, and extra receptacles may be added if desired.

AA 152

Ceiling Heater and Light

NUTONE, INC., Cincinnati, Ohio. A combination all electric ceiling heater, overhead light, and air circulator has been designed to overcome the disadvantages and hazards of ordinary wall or portable heaters.

Coupon on this page

Installed in the ceiling, scarce wall space is left for other necessities. It is ideal for bathrooms, bedrooms, nurseries, recreation rooms, and other small areas in the home.

A more uniform warmth is supplied than that given by portable heaters as heat that ordinarily rises in a room is drawn from ceiling and forced down into the room.

Some models operate without the heating element providing a circulating flow of cool air for summer comfort.

A recessed overhead light gives soft illumination. The unit is quickly and easily installed and may be cleaned without difficulty.

AA 153

Gas Burner

ROBERTS-GORDON APPLIANCE CORP., Buffalo, N.Y., announces the addition of a gas burner developed especially for converting furnaces and boilers which have been designed for use with oil burners. This gun type or inshot burner is fired through the opening provided for the draft tube of an oil burner. Adaptable for small boilers as well as oil fired gravity or forced warm air furnaces.

Maximum input rating of 175,000 Btu per hour, it can be used in all boilers or furnaces within its rating, whether round or rectangular. Easy to install, the burner is furnished with a flanged air duct to simplify mounting. AGA listed for natural, mixed, or manufactured gas.

Features an iris orifice and patented spreader flame gas burning principle. Simple design assures low operating cost and easy, inexpensive installation. AA 154





Above: Welding Electrode

Inshot Gas Burner

Resistance Welding Electrode

WEIGER WEED & CO., DIV., Fansteel Metallurgical Corp., Detroit, Mich., has available a new type of resistance welding electrode consisting of an expendable cap which fits into semi-permanent adapter shank. This in turn fits into any standard Morse taper type electrode holder. Copper savings up to 75 per cent are possible, depending on the shank length.

Electrodes come in six nose styles: pointed, dome, flat, offset, truncated cone, and radius face, also in three alloys, and two Morse taper sizes.

Adapter shanks are made in two Morse taper sizes and nine lengths ranging in ½ in. steps from 1½ to 3½ in. All electrodes fit interchangeably into any adapter shank of the corresponding Morse taper size, and project ¾ in. from the shank.

Electrodes fit into the adapter shank by pressure from mallet or welding machine and are removed with an extractor tool. One adapter shank should outlast ten electrodes.

AA 155

Automatic Air Diffusion Grille

DE-HU-MATIC AIR CONDITIONING CO., Dallas, Texas, has developed an automatic air diffusion grille primarily for use on evaporative cooling installations where only 100 per cent outside air is treated and change of seasons or temperatures makes redistribution of air necessary.

A set of thermostatically moved lower horizontal louvre blades respond to the temperature of air passing through the grille. They either raise or lower the entire air displacement to compensate for sudden weather changes.

AA 156



Burner-Furnace Units

MAY OIL BURNER DIV., Gerotor May Corp., Baltimore, Md., announces a new series of burner-furnace units fully enclosed in a completely restyled cabinet designed to step up both heating performance and fuel economy.

Offered in four sizes, all fired by oil burners, the units are rated at .90 to 2.00 gph, with bonnet outputs from 90,000 to 200,000 Btu. Four models available. AA 157

Gas Fired Horizontal Furnace

AIRTEMP DIV., Chrysler Corp., Dayton, Ohio, has announced production of a gas fired horizontal furnace,

(Continued on page 89)

For Your Convenience to Cut Out and Mail-

We will ask the manufacturer to send full particulars about the equipment and literature described.

Be sure to circle the items for which you wish complete information.

11.5

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Mail to American Artisan, 6 N. Michigan Ave., Chicago 2, Ill.

MILWAUKEE-

"BUY SCHAEFER - - - IT'S SAFER"

Buying ALL your brushes from SCHAEFER, you can be sure of one high standard of performance, durability, service, and value. You'll enjoy easier inventory control — and you get the correct brush for every need, because of Schaefer's complete line and complete stock.

In Flue and Boiler Brushes — insist on Schaefer's "SILVER BRITE" rustproof spring steel wire, developed for longer wear, more effective cleaning.



Rectangular Flue Brushes No. 8-415-2"x4"x456" No. 8-416-3"x5"x4%"



SCHAEFER Bnifer Brunber S-303—1% "x4"x5%" S-304—2% "x6"x6%" S-305—3% "x6"x6%"



BCHAEFER Boiler Brushes



SCHAEFER Builler Brushes 8-399-2"x4"x6" 8-499-214"x414"x6" 8-401-3"x3"x8"



Single and Double No. S-432—Single Spiral
—1" to 4" dia.
No. S-433—Double Spiral
—1" to 4" dia.
No. S-434—For s m a l i
Flues. '4" to
1" dia.



SCHAEFER Round Flue Brunhes of Single Spiral, Fiat Steel Wire No. S-430-1" to 4" dis.



SCHAEFER Rectangular Flue Brushes of Figt Steel Wire-Spiral No. 8-420-2"x3\4"x4" No. 8-425-2\6"x6\4"x7"



SCHAFFER FURNISH Brushes of Silver Brits Rustproof Steel No. 8-442-3", 4", 416", 5" with 5 ft.



Fibre Furnare Brushes Selected Bassine fibre, flexible wire stem, 4", 5", 6" dia., 48" and 60" handle. No. B-444-445





3CHAEFER Chimney Cleaning Brushes No. 65-6", 7", 8", 10" and 12" dia, round style of Black Tempered Brush No. 665-6"



SCHAEFER
Wire Wheel Brushes
Solid Center Type of
crimped steel wire.
No. 276—6" dia. x 1%" face. No. 278-8" dia. x 1%" No. 380-10" dis. x 2" face.



SCHAEFER Handy Wire Brush No. 816 - For roughing, soldering etc., 6" long, tempered steel wire trimmed 1%".



Dope Brushes

Tinners soldering brush, horsehair filling, 1½", width, 1½", overall.

Twisted wire handle.





Tube Brushes



Standle Wire Brushes steel wire, trimmed 14", hardwood block, 14" long. Brush 6", 2, 3 or 4 rows. No. 810 - Oil temp





Schaefer Copper Tube
Schaefer Copper Pipe
Cleaning Strukes
Clean Stiling Scatter, For Cleaning Oruside of
casier, nafer. In 9 stweetching, in 1.D. Sines of
for 1.D. or Nominal Fitting %,", 1, ", ", ", ", " and 1",
Sines from 14," to 3", ", 1, ", ", ", ", ", ", " and 1",



SCHAEFER Vacuum Cleaner Brushes No. 1005—Bassine Fibre Brush. 10½" dia. tapered to 3" dia. x fi ft. long—48" handle with threaded nipple at end.

No. 1000—Bassine Fibre Brush. 10%" dia. brush x 10" long. Handle 39" with threaded nip-ple at end.



Wire Fine Brush and Extension Haedles

- 4 ft. Handles with Nipple and Coupling.
- 5 ft. Handles with Nipple and Coupling.
- 6 ft. Handles with Nipple and Coupling.

Write for SCHAEFER Boiler and Flue Furnace Catalog No. 650, or for informa-tion on any special brushes you may need.

SCHAEFER BRUSH MFG. CO.

117 W. Walker Street

Milwaukee 4, Wisconsin

MOTORS

FOR HEATING, VENTILATING AND REFRIGERATION

tfactory Performance

- In our abuse the absence fatics provide
- O Hart million to the quietly.
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Typical Century Motor Applications

- Oil Burner Motors meet requirements of underwriters — each motor is balanced — smooth, trim appearance, easy to clean — compact dimensions all mounting dimensions industry standard.
- Unit Heater Motors NEMA standard for shaft mounted Fans and Blowers. Furnished: single speed — two speed or adjustable speed. For operation on single or polyphase or direct current.
- Fan or Blower Motors For attic fans window fans — exhausters — air spreaders — furnace blowers.
 A. C. — D. C. Motors for all forms of air moving jobs.
- Stoker Motors For home and commercial sizes.
- Refrigeration Compressor Motors—Up to 400 H. P.
 —single or multi-speeds—high starting torque for hard-to-start loads—designed for use with automatic starters for refrigeration cycling. Century motors are widely known for their unusually quiet starting and running.
- Pump Motors Up to 400 H.P. for water circulating heating systems refrigeration systems all form of liquid moving.

Century offers a wide range of types and sizes up to 400 H. P. — with operating characteristics to suit the wide range of driven equipment. Call a Century Branch sales office or your local distributor.

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Century Electric Company Is Celebrating its 50th Year in the Electrical Industry

AMERICAN ARTISAN, NOVEMBER, 1951



Are you overlooking profit underfoot?

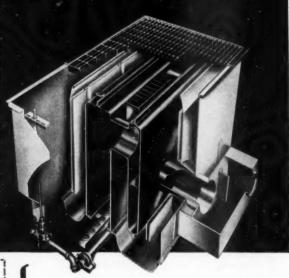
FRUGAL (IS FLOOR FURNACES

... give you all these features:

- Only 25 1/2 everall depth
- 35,000 to 70,000 BTU ratings Triple-plate outer casing
- · More heat from less space
- · Super-efficient, extra quiet
- · AGA approved
- For natural, manufactured, bottled gas
- . Basa 100% safety pilot
- Factory assembled
- · Rust-proof, trouble-free burner parts
- · Completely automatic M-H control

A natural for contractor profits, the WASHINGTON FRUGAL Gas Floor Furnace is easily installed in new or old homes . . in the floor of any building with or without a basement. Producing as much as 50 % more heat, it is two whole inches shallower than comparable units.

Competitively priced, these new floor furnaces are made in 35, 50 and 70 thousand BTU ratings. For new installations or quick, lowcost conversions, earn extra profits and extra customer good will with WASHINGTON FRUGAL Gas Floor Furnaces . . . product of Gray & Dudley, a respected name in heating appliances for almost 90 years. Use the coupon for detailed infor-



GRAY AND DUDLEY CO., Nashville, Tenn.

Please send me specifications and details on WASHINGTON FRUGAL Gas Floor Furneces. i am a 🗌 Dealer Contractor

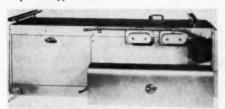
The most complete line!



Coupon on page 85

available in three models with input capacities of 60,000, 80,000 and 100,000 Btu. It can be fired with natural, manufactured, or LP gas.

A packaged unit, it is shipped completely assembled thereby eliminating expensive installation cost. All accessories and controls, except thermostat, are mounted and electric wiring and gas piping are completed to casing outlets. Especially suitable for under floor, attic, or suspended applications.



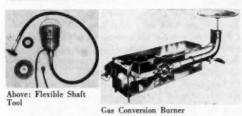
Unit features flue outlets on each side of furnace, mounts for draft diverter on either side, and hanger brackets which serve for overhead suspension or may be placed on bottom for base setting.

Additional features are welded heavy gauge steel heat exchanger, milled slot burners with single screw air adjustment which prevents clogging and assures instantaneous ignition, controls fully enclosed which can be mounted on either side of cabinet, and multi-blade centrifugal blower, rubber mounted for quiet operation, with adjustable continuous duty motor and adjustable AA 158 fan speed.

Flexible Shaft Tool

BARTON PRODUCTS, INC., Defiance, Ohio, has perfected a new flexible shaft tool for use in shops which do not require heavy duty industrial units. Numerous attachments are available and may be purchased through jobbers or supply houses.

Weighing 50 lbs, tool has 1/4 hp motor with switch, 6 ft industrial flexible shaft, bail for hanging, heavy duty handpiece, cord and plug. Grinding wheel and AA 159 wire brush are included.



Gas Conversion Burner

THATCHER FURNACE CO., Garwood, N.J., offers a gas conversion burner for natural and mixed gas at 160,000 to 300,000 Btu rating.

Burner duct provides a direct flow of secondary air to the point of combustion, assuring highest burning

ochester GAUGES

SAVE OUR DEALERS MONEY BY CUTTING DOWN LONG-DISTANCE SERVICE CALLS!"



"Our dealers serve an area that covers Eastern Washington and Oregon, the panhandle of Idaho, and the state of Montana. That means lots of miles for a service call. In the 10 years we've been handling Rochester "Dual-Dial" Gauges we've found that we can depend on them to keep our dealers' service calls to a minimum. The result is bigger profits for all of us."

Charles G. Bla

CHARLES A. BLACK OIL EQUIPMENT Spokane, Washington

Mr. Black is typical of wholeselers the country over who have found through experience that the positive leak-proof feature of Rochester "Dual-Dial" Gauges stands for dependability. And they've found that Rochester Gauges pay off in years of troublefree service and greater customer satisfaction.

Rochester "Dual-Dials" can mean more profits to you, too! Here's why:

- . LEAK PROOF . PRESSURE TIGHT
- EASY TO READ
- PROVED IN SERVICE INCREASE CUSTOMER SATISFACTION
- . UNDERWRITERS' LISTED for 25 years

Stocked by your wholesaler for all standard basement oil burner storage tanks with 11/2" and 2" flanges. Order today. Rochester Manufacturing Company, Inc., 66 Rockwood Street, Rochester 10, N. Y.



MANUFACTURING COMPANY, INC. DIAL THERMOMETERS GAUGES





simple assembly

low cost

PARKER-KALON Jiffy

DAMPER REGULATOR

Developed to meet a demand for a low cost device for domestic air conditioning and furnace installations, the P-K* "JIFFY" Regulator incorporates such desirable features as: (1) Slip on attachment: (2) Wing-nut locking; (3) Rattle-proof fastening; (4) Lever, attached parallel to damper, instantly indicates position in duct; (5) Easy mounting on round or flat surfaces; (6) Formed of heavy gauge steel, cadmium plated to resist corrosion.

Also available from your P-K Distributor . . . the popular leakproof, rattleproof "DIAL" Regulator, and for heavy duty, the "UNXLD" Quadrant. Remember . . . IF IT'S P-K . . . IT'S O.K.

PARKER-KALON DAMPER CONTROLS

Makers of the Original Self-tapping Screws



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Describes all types and sizes of P-K Damper Controls. Tells why leading contractors everywhere prefer them. Parker-Kalon Corporation, 200 Varick Street, New York 14, N. Y.

efficiency in round boilers and furnaces. In rectangular boilers this burner with its round distributor heads radiates heat to all heating surfaces more efficiently than a square or rectangular burner.

Manual control on gas valve permits operation of burner in event of electric service failure. Automatically recycles when power is resumed. AA 160

Collar Edging Rolls

NIAGARA MACHINE & TOOL WORKS, Buffalo, N.Y., has developed collar edging rolls which prepare round sheet metal pipe for inserting in a flat sheet. The contour of the rolls raises a bead above the pipe surface and at the same time crimps the edge so it is smaller than the pipe diameter. The crimped side of the bead is flat in order to provide a good seat for the sheet. Due to the unusual height and shape of the bead, the diameter and common center of the hole in the sheet cut to receive the pipe is not critical. Crimped edge can easily be drawn over to form a tight joint with the sheet.

Rolls are made of alloy steel, hardened, and polished. Available for use with No. 164 Universal rotary machines, capacity 24 ga and lighter, and No. 172 electric combination machines, capacity 20 ga and lighter.





Left: Edging Roll

Intercommunication Phone System

TALK-A-PHONE, Chicago, Ill., has produced a new intercommunication phone system in a low price range, suitable for use in offices, stores, factories, and shops.

Incoming calls may be answered from a distance of up to 40 ft from any master station or substation, stations may talk with each other, substations may be called selectively or exclusively to any master station, and any master station may be used privately or non-privately.

Primarily designed for systems requiring operation of more than one master station along with substations, incoming calls may be answered by master stations or substations without manual operation.

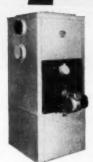
Combination systems for five and ten stations are available. Master stations are equipped with talk-listen switches, standby, station selectors, and volume control, while staff stations require no manual operation. AA 162

Oil Fired Suspended Furnace

DELTA HEATING CORP., Trenton, N.J., announces production of oil fired warm air furnace in two sizes. This unit may be suspended from ceiling to heat commercial buildings by direct air blast or attached to ductwork. It

FURNACES IN One!

STOCK ONE FURNACE...COMPETE FOR ANY JOB:

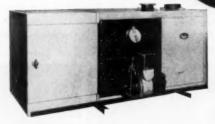


Halco

GAS OR OIL HI-BOY ASSEMBLY GAS OR OIL
COUNTER-FLO
ASSEMBLY



AS SUSPENDED UNIT



THE Halco DU-ALL

Now available . . . the Halco DU-ALL . . . <u>ONE</u> furnace for every heating job. It's a Hi-Boy . . . a Low-Boy . . . a Counter-flo . . . for gas or oil . . . or a horizontal unit for oil. ONE unit, with two interchangeable burners, one for gas and one for oil, may be assembled in SEVEN different ways.

ALL GAS FIRED ASSEMBLIES APPROVED BY AGA



AMAZINGLY EFFICIENT

The capacity of the Halco DU-ALL is 120,000 BTU bonnet delivery with either gas or oil. It is easily serviced, quickly assembled and . . . there has been no sacrifice in efficiency to achieve this amazing versatility.

Reduce Your Inventory

Instead of stocking SEVEN furnaces you stock ONE Halco DU-ALL plus one gas and one oil burner. The Halco DU-ALL Burner Exchange Plan adds to your profits. It's a NEW, Revolutionary "DU-ALL" furnace. ORDER YOURS TODAY!

WRITE . WIRE . PHONE . Halco DU-ALL IS READY FOR IMMEDIATE DELIVERY

HALL-NEAL FURNACE CO.



Unique... Easily, Quickly Applied... Provides Positive Latching Action

Tutch Latch opens doors automatically with touch of wrist, arm or elbow. It's easily applied to metal surfaces. Saves time on the assembly line. Field-tested latch construction assures easy positive action...long life. Inquire about it NOW.



Coupon on page 85

also can be used to heat basementless homes by installing the unit in the crawl space underneath the house or in the attic. Provision has been made for pipe legs and flanges to support the furnace.



Only 20 in. high, this furnace can also be installed in partly excavated or low ceiling basements. Units have an output of 75,000 and 110,000 Btu per hour and are fired with flanged atomizing oil burners. Casings measure, length 62 in., height 20 in., and width 28 in. Built-in refractory combustion chamber, air filter, and large blower are shipped factory assembled. AA 163

Sprayed Coll Dehumidifier

KENNARD CORP., St. Louis, Mo., announces the addition of sprayed coil dehumidifiers to their present line. These units are available in a large number of sizes and are of galvanized construction with copper tube and copper finned coils for long life.

The dehumidifiers offer the advantage of washed air at all times plus wetted surface of the cooling coil for better heat transfer. The unit is also suited for use as an evaporative cooler for off season loads. AA 164



Sprayed Coil Dehumidifier Right: Drill Guide



Drill Guide for Inaccessible Places

THE RIPPER, Yakima, Wash., announces a drill guide that spaces holes for cutting circles, squares, etc. in inaccessible places.

Uses a standard length $^{+6}_{16}$ in. drill which speedily cuts openings any size or shape. Handle may be turned to clear obstructions. Drill easily sharpened. Cuts nails, knots, etc. Works well in close quarters where saw cannot be used.

Induction Hardening for Dies

DRIES A KRUMP MFG. CO., Chicago, Ill. A special machine developed for induction hardening of press brake dies has increased the life of ordinary heat treated dies by many times. The machine consists of a traveling unit to handle both male and female bending and forming dies of any length. Adjustable automatic controls govern



CHAR-GALE Packaged Aluminum Fittings

Yes, Char-Gale offers you all the advantages of aluminum fittings, plus a packaging system which means money to you. If you're a Char-Gale customer, you actually pocket extra money through savings in time and storage space. Here's how:

SAVE TIME

There's no sorting and resorting, the Char-Gale way. Your fittings come in plainly-marked, easy-to-handle cartons. Any item can be found quickly and easily, because it's never been lost in a jumbled bin. It stays in the convenient carton until you need it.

SAVE SPACE

Char-Gale packaged fittings provide a flexible storage system, easily arranged to fit your floor space and stock on hand. The compact cartons can be stacked in a small area, to ceiling height if necessary, without the use of expensive bins or shelving.



REDUCE COSTS

No longer do you need to lose money on damaged fittings. Char-Gale fittings are nested and protected in the carton, to be removed when needed. And with all their advantages, you'll find the original cost of Char-Gale packaged fittings surprisingly low!



...the control that's nationally advertised to your customers





First and finest for all types of automatic heating plants.



field TYPE Rand SCOTTY"

First and finest for all types of space heaters and ranges.



First and finest for hand-fired furnaces and boilers, a combination check damper and draft control.



field RNA-W

First and finest for automatic water



the speed of the die thru high frequency induction heating unit and quenching station for obtaining a predetermined depth and degree of hardness that is uniform the entire length of the die.

This specially developed process adds very little, if anything, to the cost of conventionally heat treated dies and shows considerable saving in over all die costs for bending and forming operations.





Induction Hardening

Centrifugal Fan

Centrifugal Fan Arrangement

TRANE CO., La Crosse, Wis. A new centrifugal fan with weatherproof hood over the motor drive section can be installed outdoors without additional protection.

Available in wheel diameters as large as 60 in., backward or forward curved blades, single width, and single inlet construction. Line includes forward curved blades in 21 sizes from 12 to 89 in, wheel diameters and backward curved blades in 23 sizes from 12 to 109 in. AA 167 diameters.

Gas Fired Forced Warm Air Furnaces

COLEMAN CO., INC., Wichita, Kan. New gas fired forced warm air furnaces for use with Blend-Air or conventional duct systems are available in a range of input



Three gas models are AGA approved for all gases at ratings of 125,000, 100,000 and 75,000 Btu.

Output ratings of two oil fired models are 80,000 and 100,000 Btu. Both are listed by Underwriters' Laboratories and comply with Commercial Standard CS-75.

Gun type burners in the new oil models are designed for quiet, safe, economical operation. Each unit operates

at 100 lbs pressure and is adjustable for No. 1 or No. 2 fuel oil. These units feature direct drive blower units. Casings are rigid and airtight to meet static pressure requirements of the Blend-Air distribution system.

Factory assembled including standard controls. AA 168

A day in the life of your

REPRESENTATIVE





7:30 A.M. Your Weir-Meyer representative stops in to see a new Weir-Meyer dealer who is having a little difficulty setting up his bookkeeping system. He helps the dealer with this and also talks about the proper approach to dealer credit problems.





10:00 A.M. In a nearby town a Weir-Meyer dealer is fixing up his place to attract more customers. The Weir-Meyer man gives him pointers—and discusses the powerful Weir-Meyer merchandising program for dealers. Later he'll spend a couple of days training the dealer's new salesmen.





1:00 P.M. Not far away an unusual service problem has come up. Your Weir-Meyer representative drives over with the dealer for a look at the job-helps the dealer find a solution by explaining principles which he learned at special engineering schools conducted by Weir-Meyer.





5:00 P.M. A Weir-Meyer dealer is close to a big order and tackles a tough heat loss calculation. Your Weir-Meyer representative gives him heat loss facts on new building materials and helps the dealer plan the complicated installation.

-



Ready to help you with any phase of your business, your Weir-Meyer representative is trained to be a valuable friend and counselor to sell Weir-Meyer equipment by helping YOU build a successful

business. We want to tell you more about him ... about the competition-beating Weir-Meyer line of furnaces and air conditioners ... about the opportunity for a protected dealership in your territory. Send the coupon below — today!

the WEIR-MEYER



dealer is a "Preferred Person"

THE MEYER FURNACE COMPANY General Offices: PEORIA 1, ILLIHOIS

Manufacturers of Weir & Meyer Furnaces & Air Conditioners for GAS • OIL • COAL • Factories: Peoria and Peru, Illinois

MEYER FURNACE CO.

DEPT. K-12 Peorla 1, 111.

Please rush information on Weir-Meyer heating equipment and desterships — at no obligation.

Name of the last o

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The TRULIRADIANT CONVERSION BURNER can be installed in almost any furnace whether square or round, gravity or forced hot air, hot water or steam with an input capacity up to 300,000 Btu. The conversion burner consists of a complete burner with an adjustable base and cast iron telescope tube and a safety pilot (complete with tubing). The controls consist of a thermostat, 25 feet of thermostat cable, a transformer, gas valve, gas regulator, main line shut-off valve and pilot cock. We do not furnish a limit switch. The burner height or length can be altered by the readjustment of a set screw and a locknut.

The unique TRULIRADIANT ADJUSTABLE ORIFICE makes precision gas flow adjustments extremely simple. This factor, along with the accurate adjustments available for primary and secondary air, makes it possible to achieve, in all cases, peak combustion efficiency and economy which follows proper combustion.



4124 Long Beach Avenue, E., Los Angeles 58, Calif.

NEW LITERATURE

Coupon on page 85

Insulating Products Bulletin

EHRET MAGNESIA MFG. CO., Valley Forge, Pa. A two color, eight page bulletin presents characteristics and advantages of a new 85 per cent magnesia insulation for covering pipe, fittings, and equipment. Tables include recommended insulation thicknesses for various temperature ranges. Copy summarizes recommended application procedure.

Other insulations briefly described include those for high temperatures, insulating and finishing cements, asbestos sponge felt, air cell, wool felt, anti-sweat, frostproof, heat-seal blankets, hair felt, fibrekote, asbestos paper, millboard, wick and rope.

AA 341

Deodorizer Folders

BOYLE-MIDWAY, INC., Cranford, N.J., offers folders in two sizes, amply illustrated in three colors on a nontoxic air deodorizer product.

Facts on research and study explain development of the solution which is useful in hospitals, homes, offices and institutions. Performance with air conditioning systems and mechanical ventilating systems by means of an evaporator is mentioned as well as use with spray gun, fogging machine, and wick bottle.

AA 342

Home Record Book for Promotion Use

JACKSON PUBLICATION, INC., New York, N.Y., has created a homeowners record book to serve promotional needs of air conditioning, refrigeration, heating, and plumbing companies servicing homes.

Designed to supply the homeowner with convenient data records in a single volume, it provides sections for 12 types of investments and expense entries together with 11 other sections such as floor plans, ground plans, medical record, family income, etc., for additional efficiency in home operation.

Format, art work, and printing represents considerable investment in publishing but cost is reasonable because the book is syndicated. Mechanical binding makes inserts easily included. It is a suitable goodwill promotional medium for Christmas or New Years. AA 343

Welding Accessories Catalog

HOBART BROS. CO., Troy, Ohio, announces a new 16 page arc welding accessories catalog (EW-164-S) containing a complete line of arc welding supplies. Sections are devoted to headshields, headgear parts, grinding shield visors, welding lens, goggles and protective clothing. Also included are electrode holders, clamps, connectors and splicers, grinders and buffers, and various other tools and welding supplies.

AA 344

Nickel Alloy Pipe and Tubing

INTERNATIONAL NICKEL CO., INC., New York, N.Y., offers a new technical booklet on fabrication and design of

What you can do to make the supply of Stainless Steel go further



Indicate acceptable alternates in composition and gage wherever possible

Keep these points in mind, too, when you order Stainless

Tell your supplier exactly where you'll use Stainless Steel and how you'll fabricate it.

Minimize scrap losses at the mill by ordering the exact sizes you will use.

Make full use of the steel you get by keeping down scrap losses in your shop.

To speed up deliveries of the Stainless Steel you need, it's important that you give your supplier as much latitude in filling your order as possible. That means specifying alternates in composition, gage and even finish wherever you can.

Alternate compositions are especially important. By government order, certain alloys including nickel, molybdenum, columbium and titanium, have been restricted as to end use. But in many cases, you may be able to obtain an alternate grade that will fit your fabricating and service requirements.

Familiarize yourself with government orders regarding the use of Stainless Steel and examine your requirements in light of these directives. If you need assistance in evaluating various grades, gages etc., our representative will be glad to help.

LOOK AHEAD

When ordering, anticipate your needs as far in advance as possible and advise the rate at which steel will be required. And, above all, turn in every pound of scrap to the mills as quickly as possible. It is needed urgently to keep new steel flowing to you.

AMERICAN STEEL & WIRE COMPANY, CLEVELAND . COLUMBIA STEEL COMPANY, SAN FRANCISCO

NATIONAL TUBE COMPANY, PITTSBURGH . TENNESSEE COAL, IRON & RAILROAD COMPANY, BIRMINGHAM . UNITED STATES STEEL COMPANY, PITTSBURGH UNITED STATES STEEL SUPPLY COMPANY, WAREHOUSE DISTRIBUTORS, COAST-TO-COAST . UNITED STATES STEEL EXPORT COMPANY, NEW YORK



U·S·S STAINLESS STEEL

SHEETS . STRIP . PLATES . BARS . BILLETS . PIPE . TUBES . WIRE . SPECIAL SECTIONS

UNITED STATES STEEL

1-1188

Coupon on page 85

nickel and high nickel alloy pipe and tubing.

Designated as Technical Bulletin T-17, the 27 page booklet is illustrated with numerous drawings and photographs. Tables on mechanical and physical properties, ASME code requirements, recommended welding procedures, etc. are presented.

AA 345

Catalog on Automatic Controls

BARBER-COLMAN CO., Rockford, Ill., presents a new 45 page, two color catalog of thermostats, motor operated valves and accessories for heating, ventilating and air conditioning applications.

Catalog F-1753-3 is a handy and well illustrated guide for selecting all types of control equipment. Sections are devoted to humidistats, thermostats, valve types and capacity tables, program switches, control motors and temperature regulators. Aircraft, electronic, unit ventilators and other type controls and accessories are shown in detail.

AA 346

Draft Regulator Circulars and Mat Service

NATIONAL FUEL CONSERVATION CO., INC., White Plains, N.Y. Illustrated consumer circulars and ad mat service are available to stimulate sales of new heat locking cast iron draft regulator.

Made of heavy machined cast iron, regulator can be mounted in any position, horizontal, oblique or vertical. Features adjustment which cannot stick in wrong position, noiseless operation, and capacity to hold in heat when burner is off. No internal baffling is required with any type new or old burner. Full installation and adjustment instructions are furnished. AA 347

New Products Literature

AUBURN BURNER CO., Auburn, Ind., has issued colored folders describing two new products.

A three color conversion gas burner folder describes a heavy semi-steel flame spreader. Features bell shaped header and heavy cast alloy heat tested dome flame spreader designed to retain heat and withstand extreme shock. Does not retain soot.

Second folder describes suspension oil and gas fired unit heater in capacity sizes ranging from 80,000 to 400,000 Btu output. Newly designed heat exchanger assures high efficiency and greater economy. AA 348

Slant Fin Radiation Folder

SLANT-FIN RADIATOR CORP., Brooklyn, N.Y., offers a new two color, four page folder on slant fin pipe radiation. Illustrations, tables and specifications are shown throughout. Brief pictorial explanation gives variety of benefits derived from installation of fin pipe radiation in small houses. A section is devoted to the description of slope top, expanded, flat top and snap on covers.

Enclosed are two detached pages, one giving bracketdiagrams and the other various type cover diagrams and instructions for installation.

AA 349

(Continued on page 101)

Save this information for your REFERENCE FILE!

OUR SALES REPRESENTATIVES:

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OHIO VALLEY FURNACE FITTINGS



Ohio Valley Hardware & Roofing Company

Metal Manufacturing Division Evansville 2, Indiana



COMPACT DESIGN FOR SHOP AND ON-THE-JOB USE

Simple and efficient self-contained spiral spring counterbalance, designed to minimize operator fatigue, does not use any additional bench space.

Clamping and folding in one motion of the operating handle affords accuracy and high production. Adjustable for narrow or wide folds and desired angle of bend.

Adjustable for sharp bends or rounded bends as required for wiring.

Designed for right or left-handed operators.

Write for Bulletin 74-A



NIAGARA MACHINE & TOOL WORKS . BUFFALO 11, N. Y.

Manufacturers of America's Most Complete Line of Presses, Shears, Machines and Tools for Plate and Sheet Metal Work

DISTRICT OFFICES: DETROIT . CLEVELAND . NEW YORK

demand ROIT CERTIFIED CONTROLS



The exclusive features of the V-579 "Bi-flex" Gas Valve prove that you get more for your money when you deal with DETROIT. You can always count on giving your customers a better

job when you install any DETROIT control. DETROIT controls are designed and built to fill your customers' needs-to give real economy and reliability through years of trouble-free service. The V-579, for example, at low initial cost, gives your customers an exclusive combination

of outstanding features which provide new standards for the efficient and quiet operation of modern gas burning equipment. And that's exactly the kind of operation that pays off with more comfort for the user, more sales and profits for you. So take advantage of this extra value-insist that your source of supply furnish DETROIT controls with all your heating equip-

This **Exclusive Combination of ETROIT** Features

V-579 "BI-FLEX" GAS VALVE

- Quiet operation-no click, no hum. An ideal replacement for noisy valves. lacal replacement for many varies.
 Rugged, compact design—easy to service.
 - "Bi-flex" motor operated low voltage. Adaptable to all gases. Inexpensive. Temperature and voltage compensation.
 - * Snap-action opening and positive closing.
 - * 1/2 inch to 11/4 inch sizes.

Means More Comfort



for your Customers

More Profits for You



UBRICATOR COMPANY

5900 TRUMBULL AVE., DETROIT 8, MICHIGAN Division of Antakan Rabaton & Bandard Sanitary Componential RAILWAY & ENGINEERING SPECIALTIES, LTD. Canadian Representatives in Montreal, Toronto, Winnipeg.

ment. Write for Bulletin No. 229.





No. 411 Thermostat-A sensitive and accurate Timed Cycling thermostat for all types of heating systems. Provides close control of room temperature. Attractively styled, easily installed and adjusted. Write for Bulletin No. 193 and Form No. 1545.

DETROIT HEATING AND REFRIGERATION CONTROLS . ENGINE SAFETY CONTROLS . FLOAT VALVES AND OIL BURNER EQUIP-MENT . DETROIT EXPANSION VALVES AND REFRIGERATION ACCESSORIES . STATIONARY AND LOCOMOTIVE LURRICATORS

Coupon on page 85

Automatic Humidifiers

MAID-O-MIST, INC., Chicago, Ill., announces a new literature sales piece depicting the comfort and economy advantages of residential humidification.

This four page folder of envelope stuffer size, lists sizes and capacities of automatic humidifiers with construction description included. It is presented as a sales aid to dealers and jobbers.

Fluorescent Lamp Ballasts

GENERAL ELECTRIC CO., Schenectady, N.Y. Two new publications on fluorescent lamp ballasts have been announced as available.

The first, a 20 page, three color booklet (GEA-5731), explains in non-technical language how fluorescent lamps work and the part the ballast plays in its operation. Illustrated with cartoons and diagrams, the book reviews the role of the ballast in modern fluorescent lighting and its contribution to the industry.

The second publication of a more technical nature (GEA-5672) deals with a new system of sound rating its ballasts. This four page, two color brochure describes how ballasts are classified according to the amount of natural hum they emit, giving typical examples of application. Booklet includes table listing of catalog numbers of ballasts according to their sound rating measurements from Group A (extremely quiet) to Group F (quite audible). AA 351

Roof Ventilator Test Results

PENN VENTILATOR CO., Phila., Pa., has available results of recent tests conducted by United States Testing Co., Inc. to verify prior claims of company regarding its syphonage roof ventilator.

Wind velocities up to 10 miles per hour were induced in a horizontal wind tunnel in which ventilator was installed at various angles. At no time were backdrafts observed. All through tests positive exhausts in accordance with published capacities resulted.

Oil Burner Catalog

SIMS CORP., Providence, R.I., announces 1951-52 oil burner supplies and service parts catalog. It is possible to figure cost of an oil burner installation or complete AA 353 heating job with this catalog.

Air Controls Catalog

AIR CONTROL PRODUCTS, INC., Coopersville, Mich., has available a new 40 page air controls products catalog. Amply illustrated in both color, and black and white photos this carefully compiled catalog shows many new products for the first time, such as drop center ceiling diffusers, vision proof grilles, ceiling diffuser drop rings, etc. Included are sections devoted to air conditioning and perimeter baseboard registers and grilles, ceiling and perimeter diffusers, damper control sets, and installation frames.

Space is devoted to engineering data and register selection. Charts show outlet velocities required.



FOLLANSBEE SEAMLESS TERNE METAL

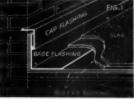


Yes, every flashing, valley and conductor in modern housing is another big opportunity for you to make a nice profit by installing Follansbee Seamless Terne Metal. Builders and home owners get maximum weathersealing protection. You get customer satisfaction and acceptance that's sure to lead to more and better weathersealing jobs on new construction and repair contracts.

Show samples of Foliansbee Terne Metal to architects and engineers. Tell them about the lifetime durability of Follansbee Terne Metal for weathersealing and roof decks, many of which have been in service more than a halfcentury. And don't forget that industrial and commercial buildings need weathersealing too.

There's a distributor nearby who can supply you with 50-ft. continuous rolls of Follansbee Seamless Terne Metal. Think of him when you make your regular check-up on roof maintenance contracts.





An easy method revising taining a perfect seal using Terne Metal for wall, parahen composition roof fold on a wood deck For further suggestions on how to use Terne Metal for permanent, profitable athersealing, write us.

FOLLANSBEE STEEL CORPORATION

GENERAL OFFICES, PITTSBURGH 30, PA.

HED BLUE SHEETS AND STRIP SEAMLESS TERNE ROLL ROOFING COLD ROLLED STRIP

Sales Offices—New York, Philadelphia, Rochester, Cleveland, Detroit, Mil-waukee. Sales Agests—Chicago, Indianapolis, St. Louis, Kanasa City, Nashville, Hoviston, Los Angeles, San Francisco, Seattle; Toronto and Montreal, Canada. Pissus—Follansbee, West Virginia

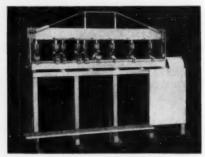
POLLANSBEE METAL WAREHOUSES

ster, N.Y.



LET FALLSINGTON SOLVE YOUR NOTCHING AND PUNCHING PROBLEMS

We can solve your notching and punching problems with two great machines — the Fallsington "C" Multi-Punching Machine and the A & B Multi-Notcher.



Above the Fallsington "C" Multi-Punching Machine is suitable for aluminum window rail and all types of multiple punching and notching. Dies are movable for entire length of machine and are self contained.

Length of machine, 3 to 6 feet.



Above — the famous Fallsington Multi-Notcher — Power driven. Made in four sizes to accommodate sheets from 18" to 48" in width — ideal for making fittings for duct work, etc.

We also manufacture—Rolling machines— Beaders & crimpers—Pipe Lock Bumping machines— —and a line of hand tools—clip punch—drive cleat notchers and omni shears.

FALLSINGTON MANUFACTURING CO.

FALLSINGTON, PA.

Manufacturers

SHEET METAL MACHINERY & TOOLS

Coupon on page 85

Gas Fired Winter Air Conditioner

THATCHER FURNACE CO., Garwood, N.J., announces the availability of a new two page, two color circular on Series 511 gas fired, counterflow, highboy winter air conditioners. This AGA approved, factory assembled, heavy gauge steel furnace features front flue construction, quiet efficient blower, large filter area, and single port burner. Designed specifically for perimeter home heating.

AA 355

Welding Cable Connections Catalog

TWECO PRODUCTS CO., Wichita, Kan., offers a new electric welding cable connections and accessories catalog designated as No. 8 Twecolog.

Illustrates and describes complete line of electrode and carbon electrode holders, ground clamps, cable and terminal connectors, cable splicers, solder and mechanical type cable lugs and new lug set block and punch for attaching solder lugs to cables without solder. Also contains information regarding care and maintenance of electric welding cables and connections.

AA 356

Ad Mat Service for Oil Burner

NU-WAY CORP., Rock Island, Ill. A new series of newspaper ad mats to assist dealers in promoting oil burner sales is now available.

Designed for use in local newspapers, these ad mats come in one column and two column sizes. Both mats and a reprint sheet will be furnished showing in actual size how these ads will appear. Air controlled with dial setting and other outstanding features described. Burns new catalytically cracked oils.

AA 357

Automatic Humidifler Folder

AUTO-FLO CORP., Detroit, Mich., offers a two color illustrated stuffer folder for sales promotion of automatic furnace humidifiers.

Explains procedure whereby weight of water in pan counterbalances water pressure at orifice placed at end of feeder pipe. Thus as water evaporates the pan is lightened causing more water to flow from orifice into pan. Slip-on cover for easy cleaning of pan and evaporator plates.

Humidifier fits all furnaces and is adaptable to any type bonnet. Unit comes supplied with evaporator plates, saddle valve, tubing, etc.

AA 352

Expanded Metal Catalog

PENN METAL CO., INC., New York, N. Y., has just issued a new catalog telling the story of manufacture of expanded metal and its uses.

Emphasis is placed on the advantages of expanded metal in saving steel and other critical metals while at the same time providing a saving in weight, allowing for free passage of light and air, offering attractive decorative effects, and permitting flexibility of construction not possible with solid sheet.

AA 359



Millions of homeowners are getting the facts of this dramatic "FIRE-TESTED" story from Rheem advertising in national magazines such as Better Homes & Gardens, American Home, and Time.

Do you know what "FIRE-TESTED" means? It means that every Rheem Gas Furnace is given a 48-

point inspection with gas and controls hooked up and burners ignited. It means that every Rheem Furnace works 100% right!

You know from experience that this is the story that sells! So learn it well! Tell it well! And it will work well to build your sales! You can Rely on Rheem.

RHEEM

MANUFACTURING COMPANY
570 LEXINGTON AVENUE, NEW YORK 22, NEW YORK

Speed up Shearing and Hammering!

Switch to BLACK & DECKER POWER





SEE YOUR NEARBY SAD DISTRIBUTOR for demonstrations, full details, expert help in selecting the right tools for your jobs. Write for free catalog to: The BLACK & DECKER MFG. Co., 682 Pennsylvania Ave., Towson 4, Maryland.

*Trade Mark Reg. U. S. Pat. Off.

DRILLS . SANDERS . SCREW DRIVERS . BENCH GRINDERS

Black & Decker

SALES SENSE

by Jack Bedford

As every apple polisher knows, customers go for high gloss. Sheen sells more automobiles, pianos, glasses, yachts—everything. An eastern butter and egg man scrubs his eggs with an automatic washer which cleans for cases an hour. Clean eggs bring 6 cents a dozen more. Polishing pays this polisher \$9 an hour. Think it over! It may pay great dividends to add a little more polish to your selling.

8 8 8

I wonder why so many salesmen like rodeos? Because they get a chance to see the bull throwing the man for a change?

8 8 8

Half a loaf is better than no loaf at all, is an old maxim. But, in these days of modern business those who succeed do not loaf at all.

8 8 8

The early settlers may have founded this country, but those who settle promptly on the first of the month are the ones who keep it going.

8 8 8

Maybe the reason that older people are quiet is because they've got a lot more to be quiet about.

8 8 8

Two things we cannot escape are education and experience.

8 8 8

When the smart city salesman arrived in the small town he asked, "How long has this town been dead?"

A native son replied, "Can't be long. You're the first buzzard we've seen."

\$ \$ 8

A saint, according to the salesman's sage, is a person who is good even when nobody is looking.

8 8 8

Adversity, they tell me, is the only diet that will reduce a fat head.

. . .

An optimist is a fellow who takes the cold water thrown on his ideas, heats it with enthusiasm, turns it to steam and pushes ahead.

8 8 8

When a man is satisfied that he is qualified for a better position the law of gravity cannot measure the attraction.

8 8 8

Our greatest trouble today is that our neighbors are always buying something we can't afford.

8 8 8

Business, unlike weeds, does not just grow; behind every successful enterprise there is energy, brains and advertising.



YOU'LL LIKE DOING BUSINESS WITH

HEIL

Many a dealer has found that there's no one as cold as an oversold manufacturer. The salesman who was so interested in you and your orders just doesn't show up. The factory that wrote you such glowing letters now sends an occasional form letter, or just rubber stamps a reply on the bottom of your letter to them. They don't seem to realize that your problems are pretty serious, too, and deserve consideration.



HEIL dealers don't have that experience. They've found that the people at HEIL are genuinely interested in their problems. They know that they will get personal replies to their questions, that they will get information that they can believe and count on—not evasions or useless "rubber stamp" answers. Ask any HEIL dealer, and he'll tell you that he really "likes doing business" with the people of The Heil Co.

But more than that, HEIL dealers have sound, honest automatic heating equipment to sell. They have a full line of oil-fired and gas-fired units designed and built wholly by HEIL, and incorporating quality they can stand back of—quality that helps them hold and build their reputations. They know that a HEIL unit sold means a satisfied customer—and one that will bring in more prospects for HEIL Automatic Heat.

Yes, even in times like these you'll find that HEIL dealers are happy. They know where they stand on deliveries. They are proud of the line they sell. They like doing business with HEIL. Why don't you write today and get complete details about a HEIL franchise. You'll be glad you did.

THE HEIL CO.

MILWAUKEE 1, WISCONSIN

District Offices: Hillside, Washington, D. C., Atlanta, Milwaskos, Detra Chicago, Minneapolis, Konsos City, Dallas, Los Angeles, Sauttle HILLSIDE, NEW JERSEY

Combustioneer* Low Pressure Oil Burner



- . "HYDRA-VATED" Low Pressure Pump
- "A flip of the finger" selects required oil capacity
 —variable from .60 to 3.0 GPH with burner
 operating.
- "Flo-mist" nozzle—15 year clog proof guarantee.
- . No pistons to change, No extra pumps needed.
- Secondary air, and variable oil capacity adjustable while burner is running.
- No lift pump required for outside tank installations.
- No special high speed motor—standard motor used.
- Simple full floating, hydraulically operated piston
 —ne linkage to wear.
- Interchangeable from low to high, or high to low pressure.

Features a completely new hydraulically operated low pressure pump—utilizing a free-floating piston which floats in a bath of oil. Operates equally well with inside, outside, single or doubtle line tank installations—no extra pump or parts need to be added. Two positive hydraulically operated shut off valves. NOTE: Combustioneer "HYDRA-VATED" pump bas a separate Underwriters' approval as a fuel pumping unit. Exclusive Triple Velocity Visorhead: 1. High velocity air above nozzle, deflected downward by visorhead; 2. Swirling velocity around nozzle thoroughly intermixes oil with air; 3. Low velocity below nozzle permits downward deflection. Underwriters' approved to burn all domestic fuel oils.

When you sell Combustioneer, you can be sure no other manufacturer gives dealers more real profit-making assistance. Mail the coupon for complete details on the new Combustioneer Low Pressure oil burner.

Combustioneer GAS BURNERS • HIGH AND LOW PRESSURE OIL BURNERS • COAL-GAS-OIL FURNACES • STOKERS • NUMIDIFIERS Menufacturers of Better Heating Equipment Since 1928 Combustioneer DIVISION

THE STEEL PRODUCTS ENGINEERING COMPANY
SPRINGFIELD, OHIO

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Combustioneer DIVIS The Steel Products Engi	
	Street, Springfield, Ohio
Please send me infor Burner.	mation on the Combustioneer dLP Oil
Name	
Firm Name	
Street Address	
City	Zone_State

INDUSTRY ITEMS

ILLINOIS PRODUCED two and Indiana one of the top winners in Winkler's 1951 sales contest which ran from January to August. Shown here are divisional winners and their new Ford convertibles. Presentation ceremonies were held at Lebanon, Ind., with Indiana's Governor Henry F. Schricker participating.



Winkler wieners

On the left are Mrs. Rollin L. Smith and Mr. Smith, North Manchester, Ind., and Claude A. Potts, vice-president in charge of sales, U.S. Machine Corp., who made the presentation. Smith's Heating and Sheet Metal Co. led the dealers' division throughout the contest on the basis of increased sales of Winkler heating equipment. Mrs. Smith is the first woman to complete both engineering and sales courses at Winkler Training Institute.

In the center are Mrs. Carl G. Lang and Mr. Lang, Naperville, Ill., Robert C. Hulse, sales promotion manager who conducted the contest, and Walter E. Blake, national sales supervisor, who presented Mr Lang with the car for leading the district sales managers' division.

Pictured on the right are Mrs. James F. Stine and Mr. Stine, Gillespie, Ill., and Phil C. Kosch, in charge of Winkler sales training. Mr. Stine won first place in the retail salesmen's division and is employed by Harrison Heating and Air Conditioning.

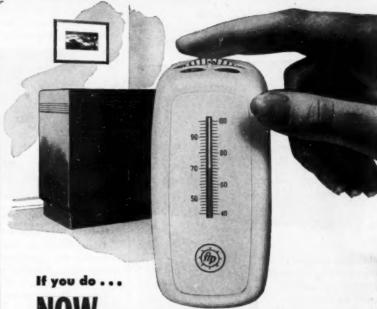
In addition to the new cars the company awarded television, radio and phonograph sets to 27 other contestants, including Ridgeway Heating, Lansing, Ill., second in the dealers' division, and Michael Emling, Home Appliance & Heating, Kankakee, Ill., third among retail salesmen.

ESTABLISHMENT OF a company sales and service office in Houston is announced by the Swartout Co., Cleveland. Both the steam specialties and roof ventilator division will share space in the M and M Building. The office will serve the entire state of Texas.

William A. Sharp of Houston is in charge of ventilator sales engineering and service. Mr. Sharp is a graduate electrical engineer, University of Illinois. Until an accident forced him to retire temporarily, he represented the Fluor Co. of Los Angeles in the Houston area for four years and the Line Material Co. of Birmingham for $3\frac{1}{2}$ years. Mr. Sharp is a member of the Edison Elec-

DO YOU SELL ONE OF THESE FAMOUS MAKE SPACE HEATERS?

ALLEN'S BARNES BENNER-NAWMAN REYER **COLE HOT BLAST** COLEMAN COLEMAN (Canada) CREST (Canada) CREST-AIRE (Canada) CUSTOM AIRE DOMESTIC DRACO FIREBALL DUO-THERM ENTERPRISE **ENTERPRISE** (Canada) ESTATE HEATROLA EVANS EVEN-TEMP FAWCETT TORRID-OIL (Canada) FESS (Canada) FINDLAY (Canada) FLORENCE GILLEN H. C. LITTLE HERCO HEAT FLO (Canada) INTERNATIONAL JUNGERS KEMAC (Canada) KLEER-KLEEN LACO LONERGAN MAGIC CHEF MARCHAND (Canada) MONARCH MONARCH (Canada) MONOGRAM NESCO NORGE HEAT ORAN PERFECTION PREWAY OUAKER QUAKER (Canada) SAFEWAY SCOTSMAN SIEGLER SILENT FLAME SUPERFLAME THERMO-PRODUCTS TORRIDAIRE VIKIMATIC



NOW YOU CAN EARN EASY ADDITIONAL PROFITS BY SELLING AUTOMATIC HEAT CONTROLS

Yes, if you sell one of the famous-make space or trailer heaters listed here you can offer every customer the luxury of true automatic, thermostatically controlled heat! This means easier selling, because you can offer comfort and convenience equal to the most expensive kind of heating, with no wasted heat — and substantial fuel savings!

What's more, this easy-to-sell comfort means Additional Profits for you. Write now for Bulletin T-2 on A-P Comfort Controls.



EASY TO INSTALL

There's an A-F Electric or Mechanical Comfort Control sotually engineered to fit these heaters. Just mount conversion toly on present manual control; connect to thermostat and transformer. Mechanical thermostat even eliminates wiring!



Famous for completely reliable service . . . in oil beating . . . gas heating . . . refrigeration.

A-P CONTROLS CORPORATION

(formerly Automatic Products Company)

2452 N. Thirty-second Street - Milwaukee 45, Wisconsin . In Canada: A-P Controls Corporation, Ltd., . Cooksville, Outsrie

WASHINGTON FRUGAL

nóersoll HEAT-RESISTANT STAINLESS STEELS GIVE ALL FOUR! -when used for

Combustion Chambers

- 1. MORE QUIET BURNER OPERATION
- 2. CLEANER HEAT
- 3. BETTER TEMPERATURE CONTROL
- 4. CONSIDERABLE SAVINGS ON FUEL COSTS

If you are using or contemplating the use of heat-resistant stainless steels for combustion chambers for oil burner furnaces, we are specialists in producing these types of steels. Whether you are a large or small user of these steels our steel making facilities can offer exceptional service by especially shearing to your specified combustion chamber steel blanks, or multiples thereof. Write us for additional information.



BORG-WARNER CORPORATION

310 South Michigan Avenue, Chicage 4, Illinois Plant: New Castle, Indiana

tric Institute and the American Institute of Electrical

Howard T. Rieley, who has represented both Swartwout divisions for many years, will continue in this territory, operating from the company offices.

SIXTY MIDWESTERN MEMBERS of the Old Timers of the oil heating industry were guests of the Webster Electric Co. of Racine, Wis., at a golf party and dinner on August 15th.

Membership in the Old Timers is drawn from all over the country, membership being limited to those connected with the oil heating industry for a minimum of 15 years.



Seated at the 10th hole are (left to right) Bruce Olson (Sundstrand), Preston Crawe (Webster Electric), Hugh Courteou (Mercoid) and Arthur Kleckner (Webster Electric). Standing are S. McCabe and S. C. Middleton.

Webster Electric was host for this year's annual summer outing with a golf meet and banquet at the Racine Country Club. Poker sessions and plenty of gab about the good old days topped off the occasion.

Webster Electric members who were hosts to the Old Timers included S. A. Loeb, president; A. E. Kleckner and P. G. Crewe, vice presidents; B. T. Wiechers, industrial sales manager; and Herb Osborne, drafting department head.

AN INCREASING NUMBER of air conditioning installations for commercial, institutional and industrial buildings throughout western Pennsylvania, has resulted in the opening of new shop facilities for this work by Dravo Corporation.

The new facilities are at 3901 Second Ave., Oakland. Opening ceremonies were attended by about 90 Dravo executive and sales personnel.

With a total of 19,500 sq ft of floor area, the new shop will include fabricating and welding facilities for servicing and maintaining air conditioning and combustion systems.

Dravo's air conditioning and combustion department, headed by B. B. Reilly, currently is installing air conditioning systems for many of the new buildings in Pittsburgh, including 525 Wm. Penn Place Building, Alcoa Building, Bigelow Apartments, Carnegie Tech's new service building, and a new wing of St. Margaret's Hospital.

(Please turn to page 130)

Unique Perfex Promotion

8,500,000 READERS

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he lady who loved a thermostat

"The lady who loved a thermostat"

story ever written about a thermostat! Send for free copy! Behind the heart-throbs . . . you'll for keep your home comfortably heated . . . with a modern thermostat heating system you have. Facts important to the health and Fun to read, too!



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HOUSE BELLETINES MINE MANIETANCE AND
BUILDING MANUAL

Most of your customers recognize the Good Housekeeping Guarantee Seal



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Kausline Presents...

The JERSEY 75 OIL-FIRED COUNTER-FLO"

Logical design for the home WITHOUT A BASEMENT!

- Saves time Saves material Easy installation
- One complete package
- Low initial cost
- Engineered specifically for utility room or closet installation in slab or crawl space homes
- Designed primarily for warm air perimeter heating
- Ideal for large scale, low cost, housing developments

Cut installation costs, overcome metal shortages, discharge warm air from the bottom of the unit directly into the crawl space underneath the dwelling. For conventional perimeter heating, ducts can be formed right in the concrete during slab type floor construction. The use of vitrified clay pipe, in the place of metal ducts, has also proven satisfactory!

We supply all essentials including a 275 gallon fuel storage tank with each and every unit!

Complete details from Dept. AN.

There is a KAUSTINE Winter Air Conditioner for every type of home





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Modulated Warm Air Furnaces from 65,000 to 270,000 B.T.U. Septic Tanks . . . Pressure Vessels . . . Oil and Gasoline Storage Tanks . . . Truck Tanks . . . Custom Built Fabricated Equipment



Electric Motors help it grow...

When you specify, install or service furnace blowers, your good name is like an orchid. It depends on warm air. In fact the blowers must deliver warmth reliably and without fail, both for your customers' sakes and yours. That's why it's wise to rely on Hoover Motors!

Hoover furnace blower motors give smooth, quiet, dependable service. They're dripproof, equipped with automatic thermal protection, designed for a 40° C. temperature rise. They're built like motors costing far, far more.

They come in different HP ratings, both split-phase and capacitor-start. So there's sure to be a Hoover Motor to fit any furnace blower you install or service—a Hoover Motor to help that blower satisfy your customer, to help your reputation grow!

Hoover Furnace Blower Motors available in ratings of 1/4 HP through 1/4 HP split-phase, and 1/2 HP through 1/4 HP capacitor-start. All feature 1725 RPM speed, Gits oilers and a resilient base built to meet NEMA mounting standards. Automatic thermo protectors have been checked and approved by Underwriters' Laboratories.

Write today for complete information—on furnace blower motors or on motors built for other purposes.

THE HOOVER COMPANY

Kingston-Conley Division 68 Brook Avenue North Plainfield, New Jersey





UTILITY'S 1

Dy-Rekt Drive Blower*



Sy-Lent Heat

Exchanger*

*Registered

UTILITY'S NEW "70FA" IS EASIEST TO SELL BECAUSE OF THESE FIVE REVOLUTION-ARY NEW FEATURES:

New Dy-Rekt Drive Blower* is quietest yet—because of exclusive integrated, direct-drive assembly.

Newly-engineered Sy-Lent Heat Ex-changer* practically eliminates noise as the furnace heats and cools.

3. Approved for Zero Clearance—can safely be installed flush with combustible mate-rial. No autside insulation needed.

4. Easiest to install—can be spotted in only 14" x 251/2" floor space—in closets, alcoves, etc. Completely self-contained.

5. The Utility Model "70FA" 70,000 BTU Forced Air furnace is fully approved under latest AGA require-ments.

Utility Appliance Corp., Dept. A-1151 4851 South Alameda St., Los Angeles 58, Calif.

Please send me FREE further information on the com-

Address



UTILITY now brings you a new high-performance furnace with unbelievable profit opportunities: The Utility "70FA"-a full 70,000 BTU forced air furnace at an amazingly low price we believe no other maker can match. The new Utility "70FA" 70,000 BTU Forced Air Furnace provides big-furnace luxury heating at a sensationally low price. It is also ideal for economical zone heating of larger

homes. And it practically sells itself at its highly competitive price-so push the new Utility "70FA" and watch the profits roll in!

Your sales territory may be open-mail coupon today!

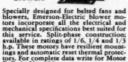
UTILITY APPLIANCE CORP. 4851 South Alameda Street, Los Angeles 58, Calif. MANUFACTURERS OF AIR COOLERS, GAFFERS & SATTLER AND OCCIDENTAL AUTOMATIC GAS RANGES

DELIVERIES



ELECTRIC MOTORS

For Belted Fans and Blowers



There's nothing unusual in being able to produce one good motor. But when that single unit must be multiplied by thousands, and all must match the original, it is a factor you should consider in selecting the motor for your products.

In Emerson-Electric motors, uniformity in appearance is unquestioned. Uniformity of performance, the important factor, has earned for them wide acceptance among America's leading appliance and equipment manufacturers. Knowing the reputation of their products is determined by uniformly dependable performance, these manufacturers turned to Emerson-Electric motors.

More than 61 years of precision motor production has made uniformity one of the many advantages inherent in Emerson-Electric motors. For full information on this complete line of motors in the 1/20 to 5 h.p. range, write today to:

THE EMERSON ELECTRIC MFG. CO. St. Louis 21, Mo.



Carey duct

ALL-ASBESTOS AIR DUCT



easily and fast, saves time and cuts cost!

for slip-joint assembly in two all-purpose forms!

air movement

speeds up installation

Carey duct

CONSERVES CRITICAL METAL, TIME AND LABOR COSTS ... POSSESSES REVOLUTIONARY **NEW ADVANTAGES!**





Single Wall Careyduct FOR WARM AIR HEATING SYSTEMS

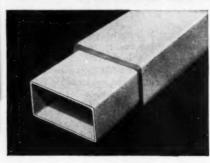
Asbestos from core to cover, Careyduct is the leading choice of

leading architects and builders because it offers a combination of advantages found in no other duct. It's light in weight, yet

strong and rigid . . . low in cost, yet high in efficiency . . . goes up

Careyduct is approved by Underwriters' Laboratories; cannot rot, rust or burn; is job-proved on important installations from coast to coast. Order it in standardized prefabricated sections

"SW" Careyduct hushes pops, groans and creaks that "telegraph" through ordinary metal ducts during furnace "on" and "off" periods. Its insulating properties conserve fuel, speed furnace-to-room heat up time. "SW" Careyduct is also ideal for cold air returns and ventilating conduits. The 3' prefabricated sections are joined by a collar, similar in texture and thickness to the duct itself.



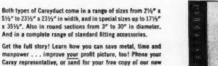
Careyduct Manual. No obligation!



Insulated and Acoustical Careyduct FOR AIR CONDITIONING SYSTEMS

"I&A" Careyduct "soaks up" sound . . . hushes air noise . . . absorbs fan rumbles and grumbles . . . makes possible whisperquiet air conditioning systems in new buildings or old. "I&A" Careyduct handles air velocities up to 2500 feet per minute; permits installation of smaller ducts where space is limited. The 3' sections are designed for rapid, trouble-free installation with ordinary tools.

Careyduct is installed by the Sheet Metal Trades





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Wherever you are ourse on the armstrong map

N A STRATEGIC LOCATION

You KEEP
the PROFIT you make
on ARMSTRONG FURNACES

If you want to see a manufacturing-pricing-merchandising setup that will plug the holes through which dealer profit so often goes down the drain, look over the Armstrong proposition.

Complete line? Certainly—gas, oil and coal—but that isn't enough. Good markup? Of course—but that isn't enough. You have to have all of the elements to make a profit which stays in your pocket!

With Armstrong you've got them. A distribution system which avoids the profit-drain of heavy inventory, yet puts the heating plant you need right in your back yard. Installation simplicity which gives you profit, not top-heavy cost. Performance which wins friends. Construction which holds customer goodwill ever the years. And beauty which helps at a glance.

Right down the line, the Armstrong picture invites critical inspection. Look at it from every angle—product, policy, merchandising assistance, profit-possibilities. If you're a progressive, vigorous dealer who can recognize an honest profit, call your nearby Armstrong distributor, or drop us a card for his name.

Please address Dept. AA at our plant nearest you.

ARMSTRONG

COLUMBUS, OHIO DES MOINES,

Warm-Air Furneces-Ges, Oll, Coal-A Complete Line



NO STAGNANT POOL TO REHEAT

Only a thin film of water forms in pan. Pan heats extremely fast. Water vapor is formed quickly—efficiently.

SUPER-SENSITIVE THERMOSTAT

Fool-proof. Gives immediate response to temperature change. Starts and stops flow of water according to bonnet temperature. Leaves only thin film of water in bottom of pan, when furnace heat goes down.

OUTSIDE SCREW ADJUSTER

Easily reached. Permits fingertip control of water flow. Lock nut assures hairline regulation.

EASY INSTALLATION

Pan rests directly on combustion dome for most efficient operation. Can be suspended in plenum chamber, if necessary.

ONE KIT TO PURCHASE

All accessories contained in one compact unit. Easily assembled—economical to use—quick to sell. With 12 pan sizes for any type warm air furnace.

THERMO-DRIP Automatic HUMIDIFIERS

With the AUTOMATIC HUMIDIFIER water drips into pan only after pan is hot. Each drop sizzles into steam as it strikes heated pan surface.

This puts the MOST MOISTURE into air stream when it is MOST NEEDED. That's why Thermo-Drip gives faster — more efficient vaporization. Write TODAY for FREE literature. Dept. A-111

AUTOMATIC HUMIDIFIER CO. Cedar Falls, lowe

QUIET AUTOMATIC

SUSPENDED OR LAYDOWN AIR CONDITIONING FURNACES



FOR GARAGES · SERVICE STATIONS and BASEMENTLESS HOMES . . .

MADE IN 4 SIZES: 85,000; 142,000; 200,000 and 240,000 B.T.U. PROMPT DELIVERIES. WRITE FOR FULL DETAILS.

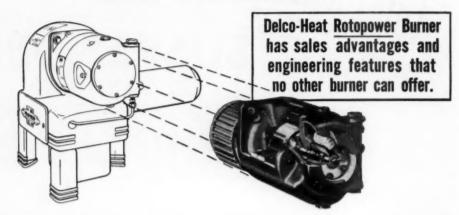
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BRANCHES OR DISTRIBUTORS FROM MAINE TO FLORIDA, CHICAGO ST JOUIS AND AU

Here's a Conversion Oil Burner Built to Sell!



The Delco-Heat Rotopower Burner has been designed for just one purpose—to give the most dependable, fuel-thrifty automatic heat that scientific ingenuity and manufacturing skill can produce.

And it's a burner that's built to sell—incorporating many exclusive features that buyers will really appreciate. Most important among these features is the Rotopower Unit. In this unit are combined the Rigidframe motor, fan, pump, oil conditioner, and Thin-Mix fuel control—all in a single cattridge-type assembly. In a matter of minutes, this whole unit can be easily removed and replaced—and inspection or adjustment of any of the moving parts of the burner becomes a simple matter.

The Delco-Heat burner nozzle and turbulator are also designed expressly for use in the Rotopower Burner. Oil is

forced through the nozzle orifice in a swirling mist, and then mixed with torrents of counter-rotating air from the turbulator to produce a mixture that burns with maximum efficiency.

Every single part in the entire Rotopower Burner—even the master control assembly—has been designed and built by Delco Appliance. It's only natural that the result is a "coordinated" burner that delivers clean, safe, dependable heat—efficiently and economically.

As a Delco-Heat Retail Distributor you will have a complete line of rugged, trouble-free gas- and oil-fired equipment—made to sell at the lowest possible prices. And because Delco-Heat units are products of General Motors you'll have the best backing and sales opportunities in the home heating field.

Oil Conditionairs



Gas Conditionairs



Conversion



Gas Burners



Oil - Fire

YOUR KEYS TO GREATER PROFITS

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DELCO APPLIANCE DIVISION, Dept. AA-31 General Motors Corporation, Rochester 1, N. Y. Please send me information about a Delco-Heat franchise.

Name.

Firm Name

City

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DELCO APPLIANCE DIVISION General Motors Corporation Rochester 1, New York

Also manufacturers of Delco water systems for farms and homes



The HOSPITAL WHITE Filter

Remember, of all the warm air furnaces now being installed, 4 out of 5 are forced air units. Added to these are the 4 million forced air furnaces already in operation. Cash in on this huge market by selling AMER-glas Filters. Set yourself up to handle the post-Christmas volume two easy ways: 1. Remind your customers that they need filters.

2. Be sure your stock of AMER-glas Filters is ready for the demand . . . send for the AMER-glas profit story, today!

LET US SHOW YOU HOW TO MAKE MONEY WITH AMER-Glas.

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	CON	PANY,	INC.		

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Fluose send me complete able Air Filters, Tell me			
NAME OF BUILDING	D 15 9	S 5 2	TEL 1997
MATERIAL AND REAL REAL REAL	DE 200 DE	200 000 000	100
超级图 原压 粉 形	0 0 0	周問品	A 10
COMPANY ADDRESS	. 10		

Let's go...let's get that SCRAP in!

All your SCRAP is urgently needed, NOW

THE scrap shortage is serious. Your scrap—every pound of iron and

steel scrap you can locate in your plant or factory—is vitally needed and needed right away. For unless you do everything possible to get this scrap on its way to the mills, steel production is bound to slow up. That can't be allowed to happen. But without your help it surely will.

To the mills, James—

To the mills, James—

To the mills, James—

To the mills, James—

To the mills of the mil

It takes at least one-half ton of scrap to make one ton of steel. With the mills turning out more than 2 million tons of steel per week, over 1400 carloads of industrial scrap are needed every day. And industry, somehow, must provide it.

What you can do to meet this emergency

First, organize a permanent Scrap Salvage Committee and make the "drive-for-scrap" part of your daily operations. Search out every possible source of scrap. Turn your old and worn-out equipment, tools and machinery over to your scrap dealer, at once. Dig out your discarded dies, rusted-out tanks and boilers, your old rails and other miscellaneous junk, and start them back to the mills through your scrap dealer. Encourage every employee to report every retired or obsolete machine that now stands idle-see that it is turned in for scrap.

By getting this "dormant" scrap off your premises and into the furnaces you'll be helping not only yourself but America as well. More scrap turned in, means more steel turned out—it's as simple as that. So let's get going.

You'll find your local scrap dealers listed in the yellow pages of the phone directory.



This page would ordinarily be used to tell you about

OUR STEEL WAREHOUSE SERVICE

but, because steel cannot be produced without SCRAP, we are asking instead for your all-out help in getting more SCRAP to the mills.

UNITED STATES STEEL SUPPLY COMPANY WAREHOUSES COAST-TO-COAST

1-1328A

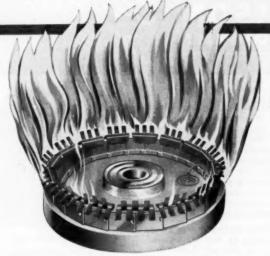
UNITED STATES STEEL

Easy to Sell! Easy to Install! Easy to Service!

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Toridheet Model F in warm air fu









The Pioneer rotary wall flame oil burner

The customer-proved economy of TORIDHEET rotary wall flame equipment makes it your best bet for sales and satisfaction. TORIDHEET equipment sells easily and stays sold.

- · Economical saves up to 50% on oil
- e Burns catalytic oil efficiently
- Quiet and clean
- Correct flame placement
- Fully automatic
- Trouble-freeone moving part
- Backed by 27 years of research and development

7306 Madison Avenue

... For conversion jobs and in complete heating plants Other Toridheet units for every need ... every budget ... Gun Burners ... Gun Fired Boilers and Furnaces...Gas Conversion Burners and Gas Fired Furnaces



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Cleveland 2, Ohio



Tripl-ife Flo-Warm Furnace



Gas Ferced Air Fle-Warm Furnace



HEATER COMPANY

WARM AIR HEATING and WINTER AIR CONDITIONING



Tripl-ife Square Cased Gravity Furnace

Gas, Oil, or Coal—there is a Williamson Warm Air Furnace for hearts content any size installation. Beautifully styled, built for life-time service, and designed for fuel economy, the models shown represent 60 years of research—and dealer satisfaction. For greater sales, easier installations, more enthusiastic customers and bigger profits investigate the Williamson Complete

Line. Write for details-

THE WILLIAMSON HEATER COMPANY Dept. AA, 4558 Marburg Ave.



Tripl-ife Round Cased



Gas Gravity Furnace



Pipe & Fittings



Oil Hi-Boy Furnace



Gas Burner









LOWEST INSTALLATION COST

you get both when you use OC METALBESTOS

Safe, Efficient Operation Metalbestos' all-aluminum, double wall construction provides maximum insulation and permanently gastight joints eliminate the possibility of fire hazards or leakage of fumes. Independent laboratory tests prove that Metalbestos keeps surrounding walls cooler than any other Type B gas vent listed by Underwriters' Laboratories, Inc.

Durable

Made from a high grade aluminum alloy, Metalbestos will not deteriorate from the effects of weather, corrosive flue gases Construction or condensates. Breakage during handling, storing or installation is eliminated because this sturdy, all-metal gas vent will not crack or shatter.

Simple Installation Metalbestos is easily and quickly assembled. Precision made QC couplers automatically align pipe sections and form leakproof joints. Adjustable lengths and all-purpose fittings eliminate expensive cutting and fitting. No cement, mastic or banding material is required — no special tools are needed.



METALBESTOS

SEND FOR FREE VENTING MANUAL

A new manual, "Venting of Gas Appliances," is now ready for distribution. Published in the interests of better venting, this valuable booklet contains the important rules for venting gas appliances and other helpful information concerning good venting practices. Yours without charge simply fill out coupon. No obligation.

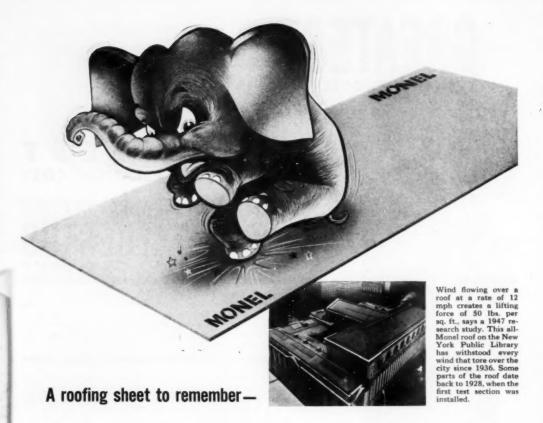


METALBESTOS E	Dept.	В	William	Wallace Co.	
Belmont, Colifor				Venting of C	

Appliances."

NAME

ADDRESS CITY STATE



...it's rigid ...it's strong and tough!

When a Monel® roof goes up, it doesn't matter much what comes down on it.

For Monel is just about as rugged as a roofing metal can be.

Two-thirds nickel and one-third copper, Monel provides twice the rigidity of commonly-used materials.

What's more, it is stronger and tougher than structural steel. (And non-rusting, besides!) It withstands damage and deformation during installation . . . and impact, abrasion and flexure after installation.

Right now—because the defense program calls for so much nickel — Government orders prohibit the use of Monel for building applications.

But the time will come again when there is enough Monel available to meet normal roofing needs! Meanwhile, INCO can help you in planning for the future. Call on our Architectural Section for the lates't technical information and literature. There's no obligation, of course.

MONEL

... 'for the life of the buildies'



THE INTERNATIONAL NICKEL COMPANY, INC. 67 Wall Street, New York 5, N. Y.



"What's in a name? Plenty ... if it's NORGE HEAT!"

R. J. WOODWARD HE PALMER-DONAVIN MFG. COMPANY

Yes . . . the name "Norge Heat" means a whale of a lot to us of the Palmer-Donavin Mfg. Company. And it can mean plenty to you as a dealer.

We became a distributor of Norge Heat products about six years ago, largely because we knew of their wide public acceptance. Since that time, we have found that our association with Norge Heat also holds these and other important advantages.

The Norge Heat line is tops for completeness! It offers all types of heating equipment for all types of fuels—oil, gas and coal. As a result, we can furnish our dealers with the right unit for every heating need.

Norge Heat prices are highly competitive—and mighty attractive to buyers. Also, Norge Heat makes available hard-hitting advertising material—newspaper mats, radio spots, etc.

This combination packs plenty of sales appeal.

Norge Heat people are extremely co-operative.

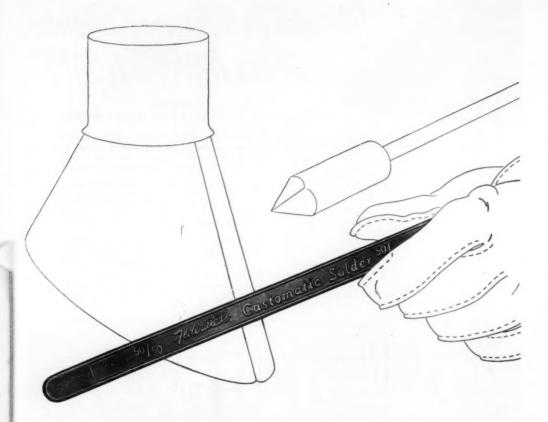
They stand ready to help us and our dealers with any sales or service problems which might arise.

The name "Norge Heat" is backed by Borg-Warner Corporation. Just one more reason why you and other Ohio dealers can expect to get the best in heating equipment and accessories from us, regardless of the size of your organizations.

In addition to Norge Heat products the Palmer-Donavin Mfg. Co. also handles a complete line of allied building products and accessories. With warehouses located in Columbus and Lima we are ready to serve you in all adjacent Ohio areas. Please phone us or drop us a line and we will be glad to tell you how the Norge Heat name can mean plenty to you, too!

Buying, Selling or Installing . . . "Living's a Treat with Norge Heat"





What Makes a MACHINE-CAST SOLDER Better?

When we say "machine-cast" we mean Federated CASTOMATIC Solder, the only bar solder cast automatically.

CASTOMATIC is better...patented CASTOMATIC machines make a drossfree solder...harmful oxides are excluded from the completely pressurized system.

CASTOMATIC is extra fine grained...has no voids or segregation to slow down your sheet metal work. Every bar of a given analysis melts at the same temperature...you work faster, more freely, without costly interruption.

CASTOMATIC solder is available in all standard sizes and compositions through your local jobber.

Federated Metals Division



AMERICAN SMELTING AND REFINING COMPANY . 120 BROADWAY, NEW YORK 5, N.Y.

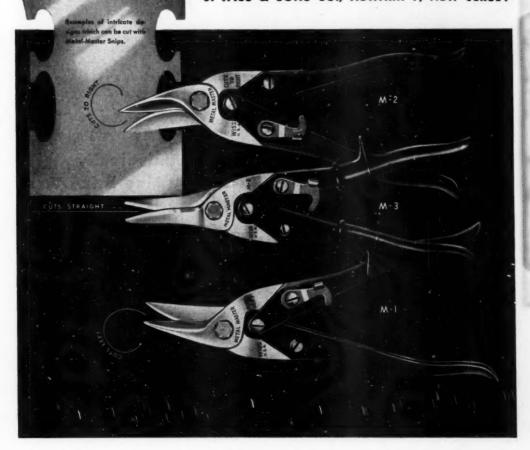
BETTER,
FASTER
SHEET METAL
WORK
with

WISS METAL-MASTER SNIPS YOU NAME THE JOB! Metal-Master compound leverage snips cut heavy sheet metal with amazing ease...inside holes, intricate patterns and curves, or standard cutting jobs. Here are just a few of the uses for which thousands of metal workers prefer them:

Making cornices • laying out leader boxes • laying out roof and drain flashings • ornamental work on leaders and gutters • all kinds of duct work, including air conditioning and hot air heating • cutting corners in kalamein work • installing kitchen and soda fountain equipment • neon sign work • cutting metal strips in linoleum laying • installing metals for store fronts, etc. In addition, Metal-Masters by the thousands are used in general maintenance work throughout industry.

Quality for over a Century

J. WISS & SONS CO., NEWARK 7, NEW JERSEY



ROAD SIGN TO REAL SECURITY



Let the Nationally Advertised, Universally Accepted Chrysler Airtemp All-Season Line Bring You BIGGER VOLUME, BETTER PROFITS!

You can't go wrong selling the Chrysler Airtemp year-'round line of products. Every home owner, every shopkeeper, every business and professional man in your locality is a prospect for one or more Chrysler Airtemp items.

You can name your choice: heating, air conditioning, refrigeration or all three. You can sell products for

every season, every type of operation, and they're aggressively supported by nationwide advertising and sales promotion.

Here's your chance to get on the Chrysler Airtemp team. Look into this opportunity today. Mail coupon for complete details about Chrysler Airtemp's lucrative franchise agreement.

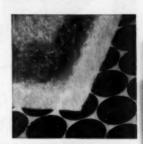
Airtemp Division of Chrysler Corporation Deyton 1, Ohio Please rush me complete information on the profitable Chrysler Airtemp dealer franchise.	CHRYSLER Chrysler Airtemp
Address	ALL COMPLETIONING MEATING COMMERCIAL DEFENDATION
CityZoneState	AIR CONDITIONING - HEATING - COMMERCIAL REFRIGERATION Airtemp Division of Chrysler Corporation, Dayton 1, Ohio

esfloss

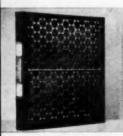
A COMPLETE LINE...FOR ALL FORCED AIR HEATING, VENTILATING AND AIR CONDITIONING SYSTEMS

GLASFLOSS 1-S FILTER

For peak air cleaning efficiency, the GLASFLOSS I-S Air Filter Unit is the answer. Here a strainer mat has been added to the famous long, glass fibers that make up the standard GLASFLOSS Air Filter pad. The combination brings air filtering efficiency to as high as 95%. No other air filter on the market can compare.



...the best, most complete, most profitable line on the market



GLASFLOSS STANDARD FILTER

This is the conventional type—the filter most in demand. The long, fine glass fibers provide a greater surface area to catch and hold more dust with less air resistance. The Glassfoss STANDARD Filter is primarily intended for home heating equipment and normal industrial installations. Available in all standard sizes.

GLASFLOSS ROLL-PAK

Here is a product carefully planned for bulk users. Cut your own filter pads—fit them into your own frames and save, with every change, as much as 30% of your air filter costs. Available in rolls, 40'' wide and 10' long and in 1'' and 2'' thickness. Application is easy. Just roll it out, cut to size and put into position. The fluffy, fine fibers are easy on the hands.



For Complete details on any product in the GLASFLOSS Line, write Dept. AA-11

Glasfloss

155 EAST 44th STREET, NEW YORK 17, N. Y.

GENERAL CONTROLS Co. of Glendale, Calif. has announced several personnel appointments.

Henry B. Safford, Jr., has been made advertising and sales promotion manager of the company. Mr. Safford formerly was a partner in an advertising agency in New York City.





Henry Safford

R. C. Servat

Robert C. Servat has been appointed manager of the new branch office in New Orleans, La. He will be in full charge of all sales activities in the office.

Joseph Fallon has been named manager of the firm's branch office in Columbus, Ohio. Mr. Fallon had been in charge of the Cincinnati office which has been discontinued.





Joseph Fallon

Eldon Burnett

Eldon Burnett has been made manager of the branch in Omaha, Nebr. Mr. Burnett had been associated with Charles D. Jones & Co. prior to joining General.

W. PAUL IRWIN, president, has announced a change in corporate name from the Grant Totten Co. to the Irwin Steel Co. There will be no change in management or policy of this Canton, Ohio firm.

The company will continue to serve furnace, sheet metal, and roofing dealers in its trading area with the same lines of equipment handled in the past.

Paul L. Wright has been appointed sales manager of the Buffalo N. Y. plant of Joseph T. Ryerson & Son, Inc., steel distributors, according to an announcement by C. S. Gedney, plant manager. He was formerly office manager and served as supervisor of the company's inside sales department.

Mr. Wright, a graduate of the Sheffield Scientific School of Yale University joined the Ryerson firm at their Chicago, Illinois plant in 1939.

In 1946 he was appointed sales representative in the Chicago area. The following year he was transferred



to the company's Buffalo plant as supervisor of inside sales activities, later also taking over the position of office manager.

THE KIRK & BLUM MFG. Co., one of the nation's leading fabricators and erectors of dust-collecting and fume removal systems, has announced completion of the primary phase of an extensive modernization of plant facilities.

From its start 44 years ago, in a storeroom of the historic St. Charles Hotel building at 232 E. Third St., Cincinnati, Ohio, the company has figured prominently in the industrial development of the Queen City.

Through its founders, the late Sylvester W. Kirk and the late Richard J. Blum, who organized the firm to meet "the urgent need for cleaner air in various industrial plants where manufacturing processes cause air polution," the company expanded rapidly, as industries came to know the need for dust and fume removal systems.



Kirk & Blum

After just seven years in business, the Messrs. Kirk and Blum found the need for more manufacturing space. They then built and occupied the now famous laundry building which is bombarded by home runs hit (chiefly by the opposition) over the left field wall of Crosley Field, home of the Cincinnati Reds.

As a corporation, formed in 1923 to permit key employees and executives to acquire stock in the business, the firm soon found need for more and more space. After several expansions, the company bought the plant and eight-acre tract of the former Cincinnati Planer Co. in Cincinnati. In April, this year, the concern concluded its seven-month moving plan into the new structure.

The plant, which can accommodate further enlargement easily, is a one-floor plan brick structure that contains approximately 120,000 sq ft. Facilities include an exterior and interior rail siding, overhead crane handling systems throughout, and other features.

Known the world over for its products, Kirk & Blum manufactures steel products of all descriptions. It has press brakes that can bend and form sheet steel up to 3/8 in. thickness and 17 ft in length, electrical seam welders capable of joining two pieces of 12 gauge metal and forming presses that can exert 250 tons of pressure.

SERVICEMAN

"HERE'S WHERE YOU'LL FIND WEBSTER ELECTRIC Authorized Service Stations" m

CO.-- 833 Champa Street

ed 6, BELL PUMP SERVICE CO. —44 New Britoin Avenue w Hoven, BBL PUMP SERVICE CO. —750 Congress Avenue

cellington, R. E. MICHEL CO.-1320 First St. N. E.

SLEWGHS
Chicago 44, W. C. MORSE CO.-4629 West End Avenue
Reckford, OX, IMAIT PARTS SERVICE—
608 Lefayotte Avenue 608 Lefayette Avonue Innerko, NORTH SHORE HEATING SUPPLY CO. -- 806 Oak Street

OTANA

ory, G. W. BERKHBMER CO., P4C.—
1040 Washington Street
dionopolis, HOOVER BOWERS CO.
—1523 E. Washington Street

Partierd 1, REPRIGERATION & OIL BURNER SUPPLY CO.— 133 Marginal Way

Boltimore 2, R. E. MICHEL CO.-MASSACHUSETTS
Brockton, R. H. AUSTIN CO.—
631 Worron Annua

631 Warren Avenue ombridge, CROMIN SUPPLY CO.— 60 Broadway

MACHIGAN
Deboil, R. L. DEPPMANINI COMPANY—
1120 W. Bullimere Avis.
Deboil J. HYDEAMICE & PUMP REPAIR
CO.—133 W. 7 Mills Bood
Groud Ropids, R. L. DEPPMANINI—
233 Fuller H. E.
MARMESOTA
S. Pool 4, TRESMAL CO., INC.—
2526 University Avanue

2326 University Amenow
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SUPPLY CO. —1534 Williamsbrids

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--- 1000 WARE REF

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COMPANY —1218-20 Bace St.
Saveland, OHIO PUMP SERVICE
COMPANY —7904 Larcoin Ave.
Viside, CHRONS ELECTRIC COMPANY
—2058 Canton Size.

ORIGON

company-1418 E.

EHOSE ISLAND co., INC. -847 N. Main Street

oit Lobe City 7, INTER-MOUNTAIN OIL BURNER SUPPLY CO.— 4043 S. Swite St.

VIR GINE A
Norfols, BEFRIGERATION SUPPLIES
— 400 W. 24th Street
Bichmond, E. E. MICHEL COMPANY—
514 S. Pine Secon
Boomske, SOUTHERN BEFRIGERATION
CORP.—1850 S. Jufferson Brook

WASHINGTON Souths, SEATTLE PUMP SERVICE COMPANY—BIT Republican Spakens, CHARLES A. BLACK paheno, CHARLES A. R./ N. 614 Monroe Street scome 3, GBNSCO, IMC 1111 South Toroma Ave

4251 Dundos St. W. oncouver, B. C. PACIFIC CONTROLS CO.—1239 Seymour St.

RACINE





CRESTOLOY DIAGONAL CUTTING PLIERS. No. 942, in 4, 5, 5¹/₂



CRESTOLOY HEAVY DIAGONAL CUTTING PLIERS. No. 542, in 7" size only.





CRESTOLOY LONG NOSE PLIERS. No. 1033, in 6 & 7" sixes. Also No. 654, same except with side cutter.



CRESTOLOY LONG FLAT NOSE, SIDE-CUTTING PLIERS. No. 650, in 7" size only.



CRESTOLOY PLIERS

are individually tested!

Crestoloy Pliers take all the guesswork out of plier buying, because Crescent has taken all the guesswork out of plier making. Rigid specifications establish the material, design, workmanship, tests and inspection of these better tools. Strict adherence to these specifications is maintained by continuous tests and relentless inspection of the individual tools. Every plier carries the Crestoloy tag certifying that it has been individually tested.

HOW TO USE



GET YOUR FREE COPY ...

This new 20-page booklet provides many useful how-to-do-it ideas both for amateurs and professional mechanics, as well as basic information on the proper selection, use and care of hand tools. 93 illustrations. Write today.

CRESCENT TOOLS
Give Wings to Work -

Sign of the Artisan Symbol of Excellence

Creacent is our trade-mark, registered in the United States and obroad, for wrenches and other tools. Sold by leading distributors and retailers everywhere and made only by CRESCENT TOOL COMPANY, JAMESTOWN, NEW YORK

...a complete, up-to-date source of product information RIGHT AT YOUR FINGERTIPS!

... the JANUARY DIRECTORY ISSUE of AMERICAN ARTISAN

READ WHAT OTHER
DEALERS, CONTRACTORS
AND WHOLESALERS
HAVE TO SAY

"This Directory is very helpful in locating equipment foreign to us from our regular supplies."

"We use your Directory an unlimited number of times both listing and advertising sections." Contractor, Fort Worth

"A fine Directory and very useful. We refer to both listings and eds many times during the course of the year."

Dealer, Slowe City, James

"A very good reference book.
It is used in our office at least
three times a week."
Wholesaler, Canton, Ohio

"Many times during the year we refer to your January buyers' guide. Advertising pages are particularly helpful." Whalosafer, Little Reck, Ark.

> "When we need product information we refer to your Directory. The ads are useful in giving us more complete data."
>
> Dealer, Springfield, Mass.

"We find the advertising as valuable as the listings. The book is used here at least five times per month." Contractor, York, Pa.

> "On the average of twice a week we consult your January Directory. We keep it handy until the next edition reaches us." Whalesaler, fort Wayne, Ind.

The time you spend in looking up sources of supply for the products you need for your jobs is money spent . . . just the same as though you dipped into your pocket and paid it out. One dependable way to find what you are looking for in a hurry is to keep the January Directory issue of AMERICAN ARTISAN constantly available for ready reference. You'll find an accurate and up-to-date listing of products alphabetically arranged, along with their identifying trade names and company addresses in the yellow section of this complete buying guide.

Furnaces, humidifiers, blowers, instruments and controls, dust collectors, registers and grilles, etc., are listed and the manufacturers who advertise in this issue are prominently identified in the event you might want to refer to their advertisements for more information.

Keep it right at your elbow . . . when you need any item connected with warm air heating, residential air conditioning or sheet metal contracting, make it a habit to pick up the January Directory issue and easily find who makes it and where they're located.

AMERICAN ARTISAN

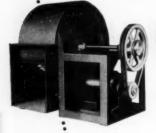
6 North Michigan Avenue

Chicago 2,

Illinois

HERE'S YOUR COMPLETE COMPACT, VENTILATING BLOWER

Peerless Electric



DRIVE UTILITY BLOWERS

Peerless Belt-Drive Utility Blowers are designed to deliver large volumes of air at extremely economical cost. These blowers are widely used for general ventilation and exhaust where duct systems are required. The units are compact, easy to mount and quiet in operation.

HOUSING AND WHEELS

The arc-welded housings are constructed of 16-gauge steel, with sturdy spot-welded motor bases. Wheels are dynamically balanced.

MOTORS

Peerless manufactured. Available in all types of current characteristics.

ROTATION AND DISCHARGE

Furnished either for clock-wise or counter-clockwise rotation and to discharge in any direction.

CUSTOM FEATURES

Weatherproof covers, available for outside installation, eliminate the need for penthouse or other protection. Inquiries are invited for other special features that may be desired.

CAPACITIES

Tested in accordance with standard test codes.

Write for complete specifications

THE PEERLESS ELECTRIC COMPANY

Established 1893 • WARREN, OHIO

Peerless Electric MOTORS · FANS · BLOWERS JOHN J. HILDEBIDLE has resigned as vice president and general sales manager of Ko-Z-Aire, Inc., Red Oak, Iowa.

Sales west of Ohio will hereafter be supervised by Richard T. Demarest, who will headquarter at the plant in Red Oak.

Sales east of Ohio will be supervised by consulting engineer Alex A. Marks, 6676 Lincoln Drive, Philadelphia, Pa.

A WEEK-LONG CONFERENCE of the entire sales organization of the Penn Electric Switch Co. was held at the main office and factory in Goshen, Indiana, during August according to R. H. Luscombe, sales manager.

District managers and sales representatives from Penn's sales offices throughout the United States and Canada, as well as company officials and department heads, took part in the conference. The five day meeting introduced new and improved products, and stressed thorough product information, new market potentials, and increased customer service. Industry problems were outlined by guest speakers representing the major industries served by the company.



Penn Meeting

R. H. Luscombe served as master of ceremonies throughout the conference, assisted by K. W. Cash, assistant sales manager, and R. V. Clark, manager of heating control sales. Albert Penn, president, and M. E. Henning, executive vice president, addressed the conference; and special sections of the program devoted to new markets and the development of new products were directed by vice presidents E. B. Maire and R. S. Penn.

THE SYNCROMATIC CORP, has announced that its greatly expanded engineering and research laboratory will be completed by January 1, 1952.

President Richard C. Jaye advises that A. B. Algren, professor of mechanical engineering in charge of warm air heating and air conditioning research at the University of Minnesota has become research and engineering consultant to Chief Engineer and Company Treasurer, John F. Hirtz.

Syncromatic officials welcome Professor Algren and promise a continued flow of proven new products of high efficiency and performance.

The greatly expanded warm air heating market of recent years calls for the most exacting engineering design, and production procedures and deserves the highest degree of technical skill available. It will remain the policy of Syncromatic to supply only the best heating products known to science.



The WORKABLE SHEET is Galvanized Steel

Bethlehem Galvanized Steel Sheets are simple to fabricate. They can be cut, formed, seamed and soldered with no difficulty, using ordinary shop tools. Smooth, good-looking sheet-metal jobs can be done in minimum time.

These easy-working sheets are made of strong, durable steel, either plain or copper-bearing. A spangled zinc coating protects them against corrosion. Their cost is low, and they give excellent service. Dollar for dollar there are no better sheets for all-around work than Bethlehem Galvanized Sheets.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation

Export Distributor: Bethlehem Steel Export Corporation

Bethlehem

GALVANIZED

Steel Sheets



IRON FIREMAN CORP. has made a series of personnel appointments in various areas.

Arthur Traub has been appointed to the field organization and is working out of the company's headquarters in Cleveland, Ohio.

George L. Beauregarde has been named district sales manager in the Pacific Coast region. His headquarters will be in Walla Walla, Wash.

Regis L. Plante has joined the company and is supervising hiring and training of dealer salesmen in the central region.



B

E. V. Crossin

W. J. Fritz

George Armour, manager of the central region has been appointed manager of the Northwest region and will make his headquarters at the office in Minneapolis.

C. F. Merrick has been appointed manager of the central region. He was formerly district manager in that region.

E. V. Crossin has been promoted to manager of the southern region with officers in Atlanta, Ca.

W. J. Fritz, has been named manager of the Pacific Coast region with headquarters in Seattle, Wash.

WILLIAM A. MATHESON, Jr., has been appointed sales promotion manager of International Heater Co., Utica, N. Y.

Mr. Matheson had most recently been associated with the Perfex Corp. in various executive positions. He had previously been with Williams Oil-O-Matic.

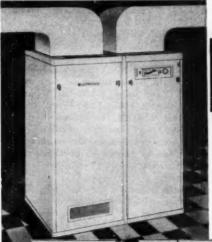
FAMOUS FURNACE Co. of Cleveland, Ohio has announced the opening of a branch in Warren, Ohio. Jobbers and distributors for heating, roofing, and sheet metal supplies, the company will serve dealers within a radius of 50 miles of Warren.

ELBERT N. MONCRIEF has been named sales representative for the Skuttle Manufacturing Co., Detroit, Mich. Mr. Moncrief will represent the company in the state of Ohio and the Pittsburgh territory of Pennsylvania.

Mr. Moncrief has spent his entire working career in the warm air heating field. His first job was with his father in the Moncrief Furnace Co. of Medina, Ohio.

PAUL S. AGEY, has been appointed sales manager of the Adelta Manufacturing Co., Inc., Philadelphia, Pa. Mr. Agey will head the sales department and direct sales promotion and advertising of Adelta standardized fittings for warm air heating. He was formerly associated with the Busch Co., Pittsburgh, and the Brundage Co., Kalamazoo, Mich.; and has extensive experience in the heating field.

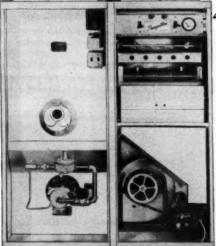




Mallron.

CLEANS as it HEATS with the WESTINGHOUSE

Precipitron



Heating Unit The Precipitron

DUALTRON is a new—but thoroughly proved—system of heating, combined in a single, compact, space-saving unit with the famous Westinghouse Precipitron. It cleanses air electronically—removes up to 90% of the damaging dirt before it gets a chance to enter the heating system.

DUALTRON then heats the clean air automatically, with an efficiency that brings new comfort in any degree of winter weather. It's all one operation.

LESS CLEANING — No constant, heavy house cleaning. Draperies, furniture coverings, rugs and walls stay clean and fresh for unbelievably long periods.

MORE COMFORT—No sudden gushes of warm air, alternating with cold drafts. Heat flows evenly, gently. Humidity is maintained at correct levels — you breathe clean, moist air.

Anchitects

Anchitects

and Contractors

ARE WELCOME TO

OUR ENGINEERING SERVICE

The DUALTRON Company
322 Perry Highway Pittsburgh 29, Pa.
Phone WEllington 1-2021

E. B. GOODWIN has been elected vice president and general sales manager of Thermo-Products, Inc., North Judson, Ind.

Mr. Goodwin had been with Perfection Stove Co. for 18 years, the last 6 as sales manager. Prior to that he had spent 10 years with American Radiator and Standard Sanitary Corp.







J. H. Rasmusser

PERFECTION STOVE Co. announces the appointment of J. H. Rasmussen as vice president in charge of sales for Perfection cooking and heating appliances.

Mr. Rasmussen has had many years of experience in the appliance field, starting in 1925 when he became associated with the Sterling Radio Co., Kansas City, Mo., as a city salesman. Later he became a territory salesman, then manager of the Omaha and Wichita branches.

Following World War II, Mr. Rasmussen served as vice president in charge of sales and merchandising for the United Wall Paper Company in Chicago. In 1947 he organized the J. H. Rasmussen Co., manufacturers representatives.

C. S. STACKPOLE, vice president and general sales manager of Airtemp Division of Chrysler Corp., Dayton, Ohio, has announced the appointment of six district representatives for the division's regional sales offices.

The new district representatives and their assigned regions are F. G. Hill, Dallas; J. I. Bickley, Washington, D.C.; J. J. Casey, St. Louis; C. A. Palmer, Chicago; and W. Brawner and D. M. Thomas, Detroit.

Mr. Hill, who has 19 years experience in the heating and air conditioning business, was district manager two years for the Advance Furnace Co. of Wichita, Kansas and with the Lone Star Gas Co. 17 years prior to joining Chrysler Airtemp.

Mr. Bickley, a graduate of Colorado College, has 17 years of heating and air conditioning experience. Mr. Casey, an associate member of the St. Louis chapter of the American Society of Heating and Ventilating Engineers, has spent 23 years selling, servicing, and installing air conditioning and heating equipment.

Mr. Palmer was with Acme Industries, Mr. Brawner was a sales engineer for a refrigeration wholesaler, and Mr. Thomas was a salesman for Firestone before joining Chrysler Airtemp.

THE RECENT APPOINTMENT OF Edwin A. Jones as director of engineering of the Century Engineering Corp., Cedar Rapids, Iowa, has been announced by B. J. Lattner,

put EYE APPEAL into YOUR furnace with CASINGS by Ottlas

There's no doubt about it, attractive, well designed casings by Atlas put "sell" into your furnace. Atlas casings are quickly assembled without bolts or screws, to give your dealers the labor-saving, cost-saving casings they want.

Designed exclusively for you, with your name, trade mark and other identifying features, Atlas casings are pleasing to both dealers and customers . . . because eye appeal means buy appeal.

atlas

MANUFACTURING



EUSTIS AT ROBBINS STREET ST. PAUL 4, MINNESOTA



from every angle
Our engineers are spending this season seeing

to it that I maintain my reputation as the most efficient re-circulating pump on the market and are planning to bring you even finer Little Giant Vaporizers and Little Giant Vaporizer Pumps for your next season's production.

Write for complete information on our units.

Little Ciant Vaporizer Co..inc.

REGISTERS BY

ROCK ISLAND

. . AND THE JOB IS COMPLETE!

HOOR REGISTRES

Rock Island registers add the final touch to a perfect installation. They'll harmonize with any architectural arrangement whether in a small family home or a large

building. Try the floor register on gravity installations or the forced air register . . . either will prove Rock Island's superiority. Write us for details

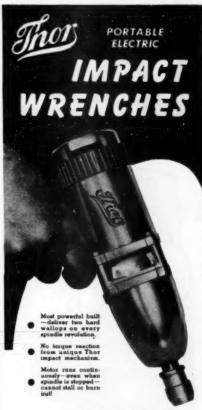


FORCED AIR REGISTERS DESIGNED FOR SIDE WALL AND BASEFOARD INSTALLATIONS

ROCK ISLAND REGISTER CO.

2435 Fifth Avenue

Rock Island, Illinois



No job is too hard—or too easy—for these great Thor Silver Line %" and %" Impact Wrenches. Try them—on any job—nut running, stud removing, drilling, tapping, acrewdriving . . . these versatile tools outperform everything in their class!

INDEPENDENT PNEUMATIC

TOOL CO.
AURORA, ILLINOIS

Write For PRIZE
Electric Tool
Catalog E-2

Volve Refacers Valve Reseater

from Jour DISTRIBUTOR A S.K. FOR T



TURNER



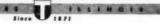


No. 475 Low Pressure TINNER'S FIRE POT

- * Ready for operation in 5 minutes.
- ★ Fuel capacity one gallon; burns for 9 hours on one filling.
- * Safer . . . reduces fire hazard of old-style charcoal burners.
- * Soldering iron rest keeps points of soldering coppers out of direct flame...saves re-tinning.
- Complete with Turner's exclusive "Carburetor Control"...
 providing solid blue flame with more perfect combustion;
 also a flame control for exact heat desired which automatically cleans the orifice, thereby eliminating need for separate cleaner wire.
- * Construction assembly permits quick, easy accessibility and cleaning ... wind-shield, top-plate, and bail handle are one unit, and can be lifted from tank in five seconds by loosening one wing nut.
- ★ Burner coil made of extra-heavy seamless steel tubing ... protected by sturdy outer jacket that maintains heat without overheating ... can be generated and used in heavy wind.
- * The combination may also be used for melting purposes.

See Your Jobber

THE TURNER BRASS WORKS



vice president and sales manager, heating division. Mr. Jones has been active in various phases of the heating industry since 1914.

Since 1919 he has been a member of the American Society of Heating and Ventilating Engineers and has served on a number of technical and advisory committees for the A. S. H. & V. E. and the American Gas Association. He is a registered professional engineer (Wisconsin) and is a past president of the Wisconsin chapter.

Prior to joining the staff of Century, Mr. Jones was staff engineer, Chrysler Corp., Airtemp Division for seven years. From 1914 to 1944, he served as field engineer for the American Radiator Co. and as chief engineer of Williams Radiator Co., L. J. Mueller Furnace Co., and the Majestic Manufacturing Co.





E. A. Jones

L L Grof

M. A. STRAUB, sales manager of Norge Heat Division, Borg-Warner Corp., announced the appointment of Lyle I.. Groff as regional manager of the Mississippi Valley area. He replaces Fred Potter who has left the company's employ to establish a heating distributorship in Florida.

Mr. Groff has been employed by Norge Heat Division for the past four years. In his new position he will serve the distributors of southern Illinois, Missouri, Kansas, Oklahoma, Arkansas, Louisiana and Texas.

R. F. Schutz has been named assistant treasurer of the Ingersoll Products Division of Borg-Warner Corp.

Mr. Schutz joined Ingersoll in February, 1944, as controller in the division's Kalamazoo, Mich., plant. He has also been in charge of contract sales, and for a time he served as production manager.

ELECTION OF James H. Ingersoll as vice president of the Ingersoll Products Division of Borg-Warner Corp. was recently announced. He previously was assistant to the president of the division.

Mr. Ingersoll started with the company in 1937, working on factory jobs during the summers between school years. Since 1945 he has been at the Ingersoll plant in Chicago in various capacities, including those of staff engineer, cost reduction engineer, manager of the rolling mill and farm implement division.

JOHN A. GILBREATH, formerly sales manager of the air conditioning division of Servel, Inc., has been named assistant vice president in charge of the division, in one of a series of new appointments announced by W. Paul Jones, president.

PEXTO

SLIP ROLL FORMERS

A size for every sheet rolling job.



3	INCH	ROLLS			0					0			36"	_	14	gauge
													42"	_	15	gauge



21/2	INCH	ROLLS	 	* *	 	 	36"	_	16	Sande
							42"	_	18	gauge
										-



2	INCH	ROLLS						0		0	e	30"	_	22	gauge
												36"	_	22	gauge
												42"	_	24	onvoe



11/2 INCH ROLLS	 20" — 26 gauge
1 INCH ROLLS	 16" — 28 gauge

THE PECK, STOW & WILCOX CO.

-since 1785-

SOUTHINGTON, CONNECTICUT, U.S.A.

GAS RESTRICTIONS

ARE NO PROBLEM

. . . When You Sell





Advance Design Gas or Oil Fired

WINTER AIR CONDITIONERS

and

GRAVITY WARM AIR FURNACES

Why? Simply because KO-Z-AIRE units are specially designed for fest, simple conversion from gas to oil or oil to gas. And, along with the many other selling features of the KO-Z-AIRE line, that's a mighty profitable one right now — if your area is affected by temporary fuel restrictions! Write today for complete details.

KO-Z-AIRE Provides All This -

- More than 30 models . . .
 All fully Automatic
- Most Units Shipped
 Completely Assembled and Wired
- Wide range of unit sizes, ratings, prices
- Ratings from 70,000 to 450,000
 BTU Input

A complete line including Counterflow Units and Gas Conversion Burner. A size for every home on your prospect list. Address your inquiry to Dept. AA-II.

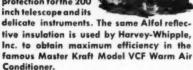
KO-Z-AIRE, Incorporated

Factory, Sales and General Offices — Red Oak, lowa Factory Representatives in Principal Cities



"It's Insulated with ALFOL just like the Mt. Palomar Telescope!"

Alfol Reflective insulation was installed in the Mt. Palomar Observatory to provide maximum protection for the 200 inch telescope and its



Alfol Asbestos insulation is pure aluminum foil combined with flat or corrugated asbestos. Compared to standard inch thick aircell, Alfol Asbestos is 88% more efficient, constitutes 75% less bulk, has one-fourth the weight, and costs only half as much. One easy-to-handle sheet of Alfol Asbestos is equal in efficiency to 1½ inches of ordinary aircell asbestos.

It will pay you to try this light weight, modern insulating material. Write today for further information or send for free working samples and test it yourself! Address Dept. AA-11

REFLECTAL CORPORATION

155 FAST AATH STREET NEW YORK 17. N. Y.

Five new vice presidents have been named, along with other personnel changes. In addition to Mr. Gilbreath, other new appointments include:

John K. Knighton, vice president in charge of sales; A. F. Scharer, vice president in charge of the international division; F. W. Ortman, Jr., vice president in charge of personnel; S. L. Nicholson, vice president in charge of purchasing; and Rudolph Schnakenburg, vice president in charge of finance. Mr. Schnakenburg retains his post as secretary.

N. J. Litherland was named treasurer, a post relinquished by Mr. Schnakenburg, and W. E. Baker, vice president in charge of manufacturing, was named to the additional post of assistant to the president.

O. J. Dail, up to now general manager of the commercial electric refrigeration division, becomes assistant vice president in charge of that division.

THE FIRST MILESTONE in the greatest dealer training program ever undertaken by a home heating manufacturer was reached by the Coleman Co. of Wichita, Kan, with a record of having had its weekly school sessions attended by Coleman dealers from every state in the union and from Canada and Mexico.

A total of 1,200 dealers took part in the first year of the program, which is planned to run five years to give 8,000 key retailers of home heating equipment a combination factory visit, installation and service school and sales clinic.



Coleman School

The school is without cost to the dealers, the entire program, including transportation to and from Wichita, being financed by the company and its 67 wholesale distributors.

In photograph, taken at end of the last class for 1951, another pin goes into map showing the localities from which this year's dealer-students came. From left to right — Sheldon Coleman, president, the Coleman Co.; William Enders, Enders Furniture Co., Oneonta, N. Y.; Frank Wolfe, service manager, York Supply, Dayton, Ohio; and Richard De Groot, Modern Home Store, Rock Rapids, Jowa.

THE APPOINTMENT OF Robert D. Howland as field service representative for the Timken Silent Automatic Division is announced by T. A. Crawford, vice president and general manager.

"SKIL makes the best drill I've used"

- says HENRY SPURGEON of the BACKMAN SHEET METAL WORKS, Des Moines, Iowa

SKIL's dependable performance is an old story to owners of these top quality tools. The 45-year-old Backman company uses the SKIL Drill for every drilling requirement in their ventilating, air conditioning and heating installations. You, too, can save time and labor by speeding your work with one or more of the 26 models of SKIL Drills. You'll find the right speed, capacity and size for every job in these reserve-powered, perfectly balanced, easy to handle tools!



Henry Spurgeon is using a Model 47 SKIL Drill, as he attaches a stainless steel collar to duct elbow. Light weight and compact size make this drill easy to use

Here Mr. Spurgeon is polishing stainless steel, as he works on a canopy for an institutional kitchen. The Model 448 SKIL Belt Sander he is using is job-proved for producing perfectly smooth finish on all



SKIL Drill - MODEL 47- Compact. heavy duty ¼" drill. Capacity in sheel:
0" to ¼", in hardwood: 0" to ½". 1800
r.p.m. no-load speed. Overall length:
7¼". Weight: 3½ lbs.

SKIL Belt Sander—MODEL 448—3" belt, Weighs 15% lbs. Size: 4½" wide x 15½" long x 8½" high, Belt speed:



Call your nearby SKIL Distributor for complete information and a demonstration in your plant.

SKIL Products are made only by SKILSAW, INC. 5033 Elston Ave Chicago 30, III.

Branches in principal cities In Canada: Skiltools, Ltd., 3601 Dundas Street West, Toronto 9, Ontario



REX "Air-Pak" Blower-Filter Unit Packaged to 3it any Job



Compact and So Easy to Install

Now is the time to be selling and installing warm air furnace blower-filter units. So, naturally, now is the time to think of Rex "Air-Paks.

Rex "Air-Paks" are so compact you don't have to take them apart on every other job in order to get them through narrow openings. Nope you don't have to build them all over again. Just deliver it . . . then install it easily, quickly.

A large variety of sizes makes "Rex" easy to service almost any job, and all sizes are in stock. Finished in a cool, green, hammerloid baked enamel finish this new Rex "Air-Pak" is easy to look at - easy to sell.

Tell your jobber you want nothing but "Rex" this year.

You Ought to Know What's in the Package

The "innords" of a packaged unit are the making of the "package." Now, let's see what Rex has got you won't find else-1. New balanced brazed blower

wheel.
2. Self-digning bearings fitted into streamlined brackets.
3. Sight-feed oil gauge. Oil reservoir contains from 4 to 5 years

supply.

4. Adjustable cut-off permits easy adjustment on every job.

5. ASHAVE Rated.





DIV. CLEVELAND HEATER CO 2310 SUPERIOR AVENUE CLEVELAND 14, OHIO



Because they are built by one of the world's oldest and leading oil burner manufacturers.

Because they are endorsed and specified by architects, engineers, builders, realty managers, Federal, State and City departments everywhere.

Because they are used by banks, schools, churches, institutions, apartment houses, commercial buildings and thousands and thousands of satisfied home owners to whom operation of Sun-Ray burners has meant years of carefree, economical heating.

Because with our sales literature, newspaper mats, displays and signs we help you sell more Sun-Ray Burners more profitably.

Inquiries Invited from Furnace and Bailer Manufacturers



139-34 Queens Boulevard

Jamaica 2, N. Y.

Mr. Howland joins Timken Silent Automatic with a background of more than three years as a Navy ordnance inspector. He was graduated from Central Michigan Teachers College in 1950.

Mr. Howland will begin his work in Michigan, and will eventually cover the Wisconsin region.



到

R. D. Howland

K. B. Solberg

BRUCE RICHARDSON, president of Independent Register Co., Cleveland, Ohio, has announced the appointment of Karsten B. Solberg as sales manager.

Mr. Solberg was born in Norway and began work for Independent in 1935. Since that time he has progressed through every department of the business.

ACRO MANUFACTURING Co., Columbus, Ohio, manufacturer of Acro-Mu snap-action switches and Crise temperature controls has recently added two new salesman to their staff of field representatives.





Ralph McCort

A linetic

Ralph McCort has been assigned the territory comprising Michigan and northern Indiana. He joined Acro in 1950 and has been training at the factory for over a year.

Al Unetic is now calling on wholesalers and manufacturers in Ohio and southern Indiana. He has been associated with Acro since 1949 and in charge of the sales order department for a year.



WE HAVE VIKING'S NEW "777" BLOWER PACKAGE IN STOCK —ORDER FROM US

L. C. Moore General Manager

THE NEW 7" DIRECT DRIVE
BLOWER MADE ESPECIALLY
FOR SMALL HOME FURNACES

A DAICTDON

ARMSTRONG FURNACE SUPPLY INC.

2434-20th St.

Detroit 16, Michigan











No. III BOOT



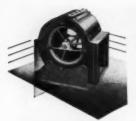
GRAY "Snap-Rite" **FURNACE PIPE AND FITTINGS** AIR CONDITIONING PIPE AND FITTINGS

A complete line of Gravity and Forced Air Pipe and Fittings with our positive "SNAP-RITE" Lock for quick assembly and erection. Wall Stack and Fittings in 31/4" standard depths. Trunk Pipe and Fittings in 8" standard depths.

Write for Catalog

GRAY METAL PRODUCTS, INC.

30 Carlton Street Rochester 7, New York



MASSACHUSETTS AIR CONDITION IN G **FURNACE BLOWERS**

Designed for manufacturers of warm air furnaces and air conditioning equipment. Wheel Sizes 71/2" to 27"



Housing sides, cutoff plate and scroll sheet. Heavy gauge steel stampings,

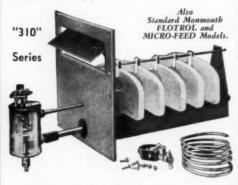
End spider suspension type wheel assembly.

Write for catalog

Manufacturers of centrifugal blowers for 36 years

MASSACHUSETTS BLOWER DIVISION 7ke BISHOP & BABCOCK Mla. Co

The "310" is designed for modern smaller furnaces and air conditioning units up to 100,000 BTU capacity. It is shipped completely assembled, and quickly installed from outside the furnace. Fro it plate includes combination plenum register and inspection door, is hinged to copper pan and fits vertical or slanting plenum. Register has pivot shut-off valve, and equals an 8 x 4 register in free area. The "510" has genuine Flotrol valve and Monite ceramic diffusing plates. Details and prices on request.



The Cleveland Humidifier Company 7802 Wade Park Avenue, Cleveland 3, Ohio

Kruckman -

(From page 30)

chain that is now wholly fegitimate, and will remain legitimate until somebody can force Administrator DiSalle to establish a dollars and cents range of ceilings for steel. Congress has long tried to get DiSalle to establish such ceiling prices. But he airily waves them aside with the suggestion that such ceilings involve very complex legal problems which it will take his legal staff a long, long time to solve.

The House and Senate small business committees hear some strange yarns to explain the black market in steel. One is that considerable of the metal set aside for small users, for those who get it by means of self-certification, is the steel that is making the bulge in the walls of many warehouses. Another story was brought by an official of a large trade organization who told, under a pledge of anonymity that in times like these some of the less ethical steel companies pay some of their officials a bonus in steel. The officials, in turn, legitimately sell the steel to something that is not unlike the daisy chain.

The Lost Steel

Recently, very much on the record, an official of a large association of manufacturers, told this story as a personal experience. He said early this year his company placed an order for a number of carloads of steel of different shapes and kinds with a reputable steel producer. The steel was to be delivered in May, June, July, August, etc. But in May he was advised the shipment for that month would not arrive until June. In June word came that both the May and June shipments would arrive that month or early the next month. But in July he was informed the steel was lost and that the steel producer couldn't find it anywhere. Late in July the whole order was cancelled by the steel producer. In August, when the narrator's company was desperate for steel, word came to them that the steel of exactly the sizes and types they wanted could be supplied at an increase of price amounting to about 300 per cent. They needed the steel badly, and after some dickering, they bought the steel. It came promptly in the very cars which had been previously certified to them as the cars in which their lost steel would be shipped. It was



See od on page 23 THE

Gray & Walnut

WE HAVE VIKING'S **NEW "777" BLOWER**

PACKAGE IN STOCK -ORDER FROM US

THE NEW 7" DIRECT DRIVE BLOWER MADE ESPECIALLY FOR SMALL HOME FURNACES

TREATY CO. Greenville, Ohio



*and naturally they're using

STANDARD'S NEW Perimeter Floor Register

with Standard's exclusive DIALAMATIC CONTROL

SPECIFICATIONS

The face and blades of model PH-142 are fabricated of 16 gauge steel, the blades are set in a fixed-fan angle degree for even deflection. The frame is of one piece, 18 gauge steel construction. The Louvre box fabricated of 16 gauge steel. Packed one to a box, and 20 to a master carton. Comes handsomely finished in gleaming, durable metallic-lustre.

For more information and Standard's New Pocket Catalog, attach this coupon to your business letterhead and mail to:

Standard Stamping & Perforating Co.

3137 WEST 49TH PLACE . CHICAGO 32, ILL.

It's the <u>LOW DOWN</u> DIRT trapped by WILSON'S HAIR FILTERS that GUARANTEES LONGER LIFE

In Wilson Hair Filters the entire dust-holding capacity is completely utilized. This means, we surface dust stopping only, but Full-Depth Dust Trapping at its best... and many extra months of filter life.

The reasons are so simple:

- The bair media in Wilson Hair Filters act in the same manner as Mother Nature's prozen way of filtering the air you breathe. It's the bair that cleans the air . . . more easily, more effectively, more economically.
- The multi-directional distribution of the hair in Wilson Hair Filters literally invites all dust and dirt to come in and be trapped throughout the entire filter interior.
- Most brands of air filters require oiling on their inlet surfaces.
 This stops dust prematurely, loads up the incoming air side and
 materially shortens filter life.

Wilson Hair Filters are not oiled on the inlet side. Instead, they receive an even distribution of mineral oil on their outlet surface, which:

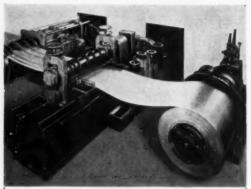
- (a) augments the already amazing ability of the hair itself, to catch and hold dust, and—
- (b) builds an impregnable barrier which halts dust and dirt after reaching the furthermost practicable penetration point.

WILSON & CO., INC.
(Air Filter Division) 4100 South Ashlend Ave., Chicago 9, III.

Wilson Hair Filters are another quality product of Wilson & Co., world-famous for meat products, sports equipment, pharmaceuticals, hair products, etc.



Save delay. Save dellars. Save doubt. Send for FREE sample



". . . we're looking for slitting business, too!

Complete equipment for precision slitting and recoiling; also decoiling, roller leveling and cutting to lengths. METALS — 14 gauge or lighter — any width up to 36".

Write us for details . . . prompt attention is guaranteed.

"Made-Rite" Co., Inc.

Manufacturers & Suppliers furnaces — Pipe and Fittings

10th and Monroe St.

Newport, Ky.

... here are the reasons why

☐rant \/ilson
DUX-SULATION

is BEST FOR DUCT INSULATION

- 1 High thermal and acoustical insulating properties... K factor of .27 BTU and sound obsorption approximately 61%. Integral, waven asbestos membrane.
- 2 Easy to handle, easy to install correctly, can't be crushed or cracked, springs back to original thickness if compressed. Supplied with special glue and tope, no "fasteners" needed.
- 3 Constant insulating values. Can't "powder", shift or sift; no thin spots, even at corners. No deterioration of any kind, no change of any kind.
- 4 Perfect adhesion, flexible, conforms to uneven surfaces. Can be installed in the shop and still withstand all necessary hadding. Specifically engineered for dect application ONLY!



Inspect Dux-Sulation yourself! Write Grant Wilson, Inc. 141 West Jackson Blvd., Dept. A Chicago 4,



IN NEW YORK CITY: Air Conditioning Utilities Co., 8 West 40th Street, New York 18, N. Y., LOngacre 3-4280. IN CANADA: Atlas Asbestos Co., Ltd., Montreal, Toronto, Winnipeg, Vancouver.

Kruckman -

exactly the same steel they had ordered in the early part of the year. Senator Ellender, who is chairman of the committee which held the hearing, wished to put all the names of those involved in the transactions in the record. It became clear, however, that to do so very probably would not only cause embarrassment to the narrator but would expose him to reprisal. All the names were placed in the record, but were withheld from publication. As a matter of fact, there are a number of incidents of this kind in the records of the committees of congress.

Frozen Steel

Another explanation for the steel mystery is that there is some shenanigans in connection with the steel that is allocated directly to the defense agencies. They are not suspected of wrong doing, but there seems to be a strong assumption that the steel is secured for those who directly produce for war equipment, and that a very large part of this steel is held immobilized. In other words, either it is stored against a time for future use which is a considerable period away, or it is held on order for shipment in the plants of the producers, or in other warehouses. It is believed huge quantities of such steel are in existence, and will not be used for months. The same is supposed to be true of copper and aluminum.

They make the point on the hill that these frozen stocks of metal should be turned loose for the use of those who need them, either for indirect defense purposes, or for non-defense purposes. The need of the future, which may change and shift over night, should be left to the time nearer the period when the steel is scheduled to be used. There is, of course, a faint atmosphere of illegitimacy about this situation. Strictly speaking, no steel should be held as inventory beyond the quarter for which it is allocated. Here, however, is where the defense people quite honestly believe they are serving the best purposes of defense by holding the metals until they can be used.

Benjamin Fairless of U. S. Steel, and Eugene Grace of Bethlehem, led the steel producers in making a steel industry report, at the request of Mobilizer Wilson, in



Irving Landerman Secy. & Manager

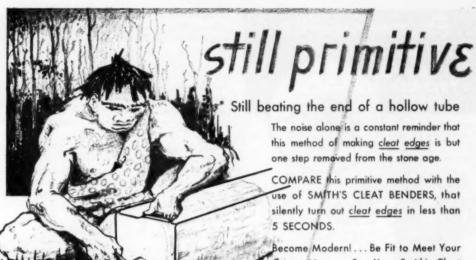
WE HAVE VIKING'S NEW "777" BLOWER PACKAGE IN STOCK —ORDER FROM US

THE NEW 7" DIRECT DRIVE BLOWER MADE ESPECIALLY FOR SMALL HOME FURNACES

MAX LANDERMAN, INC.

209-211 State Street

Hartford, Conn.



Still beating the end of a hollow tube

The noise alone is a constant reminder that this method of making cleat edges is but one step removed from the stone age.

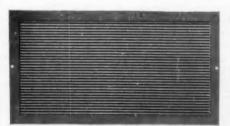
COMPARE this primitive method with the use of SMITH'S CLEAT BENDERS, that silently turn out cleat edges in less than

Become Modern! . . . Be Fit to Meet Your Competition . . . See Your Smith's Cleat Bender Distributor Now!

R.E.SMITH o

1806 BELVIDERE STREET WAUKEGAN, ILLINOIS

No Matter How You Look At It— This A-J GRILLE is Better!

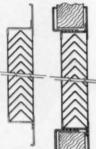


That's right. No matter how you look at it you'll agree this A-J No-Vision Door and Partition Grille is better. The following reasons tell the story.

Rigid construction: Louvers are made of aluminum and spaced on 1/3" centers securely welded in a steel flange frame.

Maximum free greg: Free greg 70% variable.

Installation costs are cut: The exclusive telescoping A-J AUXILIARY FRAME assembly which slides over the core, permits an easy and attractive installation which presents the same appearance on either side thereby reducing expensive molding costs.

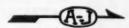


A.J Grilles. Registers and Diffusers are first choice for better design on almost any heating or air-conditioning jeb because of their high quality, low cost, ease of installation and precision workmanship.

Write for Our New Catalog - You'll find it most helpful and profitable!

A-J MANUFACTURING COMPANY

2119 Washington St.



Kansas City 8, Missouri



FURNACES

JOHN L. SULLIVAN became the world's heavyweight champion in 1889 by knocking out Jake Kilrain after 75 rounds of bore knuckle fighting.



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MANUFACTURERS OF QUALITY HEATING
Newark
Ohio

W. A. WHITNEY LEVER PUNCHES FOR EVERY SHOP AND TOOL BOX

No. 48 Punch



Capacity — 1/4" hele through 16 gauge metal Length — 8 1/2" Depth of throat — 2" Weight — 3 lbs. Stock size punches 1/16 to 9/32" by 64ths.



Kruckman -

which they said that CMP is "totally unrealistic" and suggest OPS should adjust steel prices to "fully reflect all elements of cost, including goods and services purchased as well as any wage and salary increases." The report stressed that many thousand tons of steel have been lost this year by work stoppages and slowdowns not mainly in steel plants but on railroads, in mines, and other related industries. The report asked that the impending year end wage negotiations be planned to prevent work stoppages and slowdowns. The steel people assert government has stopped issuing certificates of necessity for steel expansion and urge speedup. They complain of inability to secure enough of their own product to build very much needed expansion of their own facilities, with the consequent interruptions, serious delays and added costs. They stress the need of more scrap.

Staff Ineptitude

Most significantly the report bluntly demands that the government employ a more competent staff to handle CMP operations. It cites the lack of ability in the CMP staff as responsible for the fact that demands for structural steel from the schedule of CMP has been running at 223 per cent of the absolute limit of the combined production capacities of all plants. The steel people also emphasize the inept operation of CMP causes steel to be delivered to military contractors before the steel is required, and that such practice immobilizes the steel for others who require it urgently now. The steel people demand rigid policing of orders and CMP tickets to prevent overlapping and duplication. They urge revision of the regulations covering conversion steel, which may now be manufactured within a margin of 200 per cent price increase.

Some mills have only two day's supply of scrap on hand. Government urges obsolete machinery now stored should be turned over to the scrap dealer as fast as possible. It urges that small quantities be turned in immediately. It wants top level executives personally to supervise the operation of the scrap drive. The original estimate of 36,000,000 tons scrap this year has been increased by 3,500,000 tons.



John Phillips Treas. & Gen'i Mgr.

WE HAVE VIKING'S NEW "777" BLOWER PACKAGE IN STOCK —ORDER FROM US

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FIN-TYPE COILS For Fast, Efficient HEATING COOLING Write for Information AEROFIN CORPORATION

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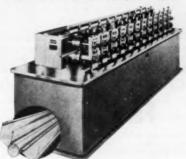
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Ohio Valley Hardware & Roofing Co. 300 Fourth Ave.

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COMPLETE IN ONE PASS!

-formed shapes of any design-



You merely feed the flat strip into the machine—out comes the finished shape.

- Production speeds up to 250 f.p.m.
- Machine shipped completely tooled.
- No experience required to operate.

Sketch or sample will bring prompt proposal Dahlstrom Machine Works, Inc.

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Roll Forming, Slitting, Straightoning, and Cut-Off Machines

Convert Gravity Furnaces With A CIRCULATAIRE Bonnet Blower



CIRCULATAIRE ELIMINATES COLD ROOMS, BALANCES HEAT DISTRIBUTION, SAVES FUEL

CIRCULATAIRE solves the problem CIRCULATAIRE solves the problem of "hard to heat" rooms, beests warm air quickly through all the heating pipes. CIRCULATAIRE is ousliy and quickly instelled without removing the beamer. Packaged unit includes motor and fam work required, no changing of cold or warm air pipes, no buffles to be built. The CIE-CULATAIRE is rigid, quiet and

MOW READY—New CIR-CULATAIRE Sales Aids add of-fectiveness to selling interview, conserves valuable selling time and increases sales.

A COMPLETELY PACKAGED HINT Nothing for the dealer to fur-nish except limited amount of labor.

GET THE FACTS TODAY! WRITE ... CIRCULATAIRE DIVISION OF CORLETT TURNER CO.



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Fans for Fans ...

. . . breezes for rooters. Nineteen Bayley centrifugals provide comfortable atmosphere for crowds attending sports, shows, conventions and other attractions staged in Milwaukee's beautiful Arena,

Dependable performance is particularly important for ventilating public places. That's one reason for choosing Bayleys. Sound design, fine workmanship and materials, complete type and size range, over 50 years manufacturing experience, back the choice.

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When you get in the oil business get in it HIGHT. Sell your clients the best in oil furnaces... XXth Century's Zeph-Air. It's designed to provide the maximum amount of heat from primary CAST IRON heating surfaces, evenly and under full control. It has the modern look and requires less than eleven square feet of floor surface. Low upkeep is assured by exact enrineering and the finest in work-

You'll be glad you investigated the Zeph-Air. Drop us a line today for more complete information.

manship and materials.

XXth CENTURY

COMPANY
AKRON, OHIO

BA KED BY A 20-YEAR WARRANTY



Warm Air Convention -

(From page 30)

presently serves on the banking & currency committee of the Senate and is chairman of the Republican senatorial campaign committee.

On the sales side of the program will be James C. Olson, partner of Booz, Allen & Hamilton, nationally prominent management consultants. Since its founding in 1914, Booz, Allen & Hamilton has worked with the managements of more than 800 businesses in virtually every line of activity. The firm makes business surveys and gives counsel on a wide range of business problems including sales and distribution analysis, planning and control, and market research. The subject of Mr. Olson's talk will be Sales and Selling.

J. D. Wilder, executive secretary of the Sheet Metal Contractor's National Association, will explain the activities of his association and how one association can supplement others for betterment of the industry.

The association's accomplishments during the past year and its goals for the coming year will be presented by the chairmen of the association's various committees. The committee reports will include those by M. I. Levy, president, Viking Air Conditioning Corp. and chairman of the association's Publicity and Merchandising Committee; and Dr. W. C. Davis, market research manager, General Electric Co. and chairman of the association's Market Research Committee.

Reporting for the Installation Codes and Technical Education Committee will be Dean L. G. Miller, Michigan State College, while F. L. Meyer, Meyer Furnace Co. will report for the Research Advisory Committee.

T. I. Byrd, Lau Blower Co. and chairman of the Task Group of the Warm Air Heating Industry Emergency Committee, will discuss the accomplishments of that committee's activities in conjunction with the National Production Authority and Controlled Materials Plan, while C. W. Nessell, Minneapolis-Honeywell Regulator Co., will report on the Field Investigation Committee's activities.

N. T. Hess, Vorys Bros. and subcommittee chairman for the *Indoor Comfort* Conferences, together with G. A. Voorhees, technical secretary of the association, will outline plans for the 1952 *Indoor Comfort* Conferences.



PACKAGE IN STOCK ORDER FROM US

Francis Sausen Vice Pres.-Sec'y THE NEW 7" DIRECT DRIVE BLOWER MADE ESPECIALLY FOR SMALL HOME FURNACES

WE HAVE VIKING'S

NORTH STAR SUPPLY (O., INC. 255 Pratt Street Buffalo 4, N.Y



PENN-AIRE FURNACES

Winter Air Conditioning and Gravity

CAST IRON, COAL FIRED

Popular Price

Practical Design

Economical Operation

UNION MANUFACTURING CO. INC.
Boyertown, Pa.





C. W. Carter Vice President

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THE CARTER, DONLEVY CO. 1419-21 Spring Garden St., Philadelphia 30, Pa.

Midco Register Corp. 1059 Grand Ave. St. Paul. Minn.



Registers — Grilles — Floor Faces — Floor Registers — Gravity Registers. The complete quality line for all winter and summer air conditioning.



Rey Trepanier

GRAY

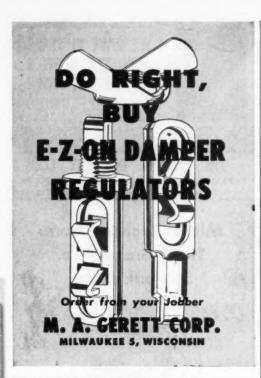
20 Franklin St.

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SUPPLY CO.

Springfield, Mass.





C. L. Sapp, Farquhar Furnace Co., will discuss the Legislative Committee's activities in preparing the proposed national warm air heating code of minimum standards for the installation of central warm air heating systems.

The afternoon of December 6 will be devoted to technical subjects presented by members of the research staff at the University of Illinois. These will include illustrated lectures by R. W. Roose, research assistant professor of mechanical engineering, and M. E. Childs, special research assistant in mechanical engineering.

"All persons connected with the warm air heating industry are cordially invited to attend the convention," said Mr. Franke. "Here is an opportunity to get together and discuss mutual problems and goals of the industry."

To assure available hotel rooms, it is suggested that those wishing to attend the convention contact the hotel for advanced room reservations as soon as possible. Write to Reservation Manager, Hotel Cleveland, 20 Public Square, Cleveland, Ohio.

Reid -

(From page 49)

ular to and intersecting line X-W.

- From X draw lines to the intersection points on the 1 in. pipe as shown by lines A B, C, D.
- 5) Draw working lines E, F, G, H, J. These lines are the intersection points of the lines drawn through the equally spaced points on the top and bottom radii and shown by lines L, N, and R on the ½ in. radius and lines 5, 6, and 7 on the 1 in. radius.
- From line X-Y measure the radius of the large pipe and draw the line marked XX-YY.

(Note: In the instructions in the text the 1/4 in. collars have been eliminated.)

To lay out the pattern proceed as follows:

- Draw a right angle. Transfer distance L from the drawing to the vertical leg and distance 5 to the horizontal leg. The hypotenuse marked L-5 will be the developed line. Establish this as center line of the layout and mark the line X'-Y'.
- Through point Y' draw a line perpendicular to line X'-Y'. Measure 1/4 in. on each side of the line and from point X' draw lines A-1.



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MANUFACTURERS SUPPLY CO

Youngstown

Ohio



Gilbert Miller President

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Acme Tin Plate & Roofing Supply Co.



FIRST furnace blower made commercially in the Middle West....TWENTY years of service in thousands of homes... continuing demand is PROOF of PREFERENCE for QUIETER operation.

It's the operation that counts in a blower. Rugged operation that's "Quiet as a Cat's Purr" and long life are assured when you install the UNIPACK.

AMERICAN MACHINE PRODUCTS CO. MARSHALLTOWN, IOWA

BARBER BURNERS



sizes to fit all types of round or oblong furnaces and boilers. Catalog and prices on request.

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A lightweight load that has found wide acceptance because it is durable, powerful, data-louve. The No. 52, has an adjustable locating stop clearly graduated to permit quick setting to any throat depth up to T. Furnished complete with sever punches and dies in strong heald correct with sever punches and dies in strong heald correct case. Capacity— 1/4 hole through 16 qu. mild steel. Overall length— 11/4. Placet of 1 qu.—1/4.

Write for our letest Catalog.

WHITNEY METAL TOOL COMPANY



Well-ventilated working environments contribute to faster, better defense production.

Western Rotary Turbine Ventilators provide constant, round-the-clock exhaust without power. A 2-mph breeze keeps your Western Rotary System in experation. Lifetime guaranteed bearings are both mounted on the same axis...

Complete, up-to-the-minute information, sizes, capacities, and prices on all Western equipment upon request. In 1951 SWEETS and A.E.C.

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ANCHOR Oil Burners



Sell Faster

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Made Better!

To cash in on your share of profits to be made from the trend to oil heating line up with Anchor... the conversion burner that PROVES itself BETTER on more major points. Economy! Ease of operation! Greater heat output! Freedom from vibration! All these advantages and MORE, are in your favor when you go after business with an Anchor. Write for complete details.

ANCHOR

ANCHOR DIVISION
STRATTON & TERSTEGGE CO.
Incorporated
P. O. Box 311, New Albeny, Indiana

- 3) Draw a right angle. From the front view drawing measure the line marked B and transfer this length to the altitude of the right angle. Measure the distance from line XX-YY to the half circle as indicated by 2 and transfer this distance to the base of the right angle. The hypotenuse line B-2 is the true length line.
- 4) Lines C and D on the front view drawing will be transferred to the altitude of right angle triangles and distances 3 and 4 to the base line. The developed lines C-3 and D-4 are true length lines.
- 5) On the front view drawing measure line E and transfer this length to the altitude of the right angle. On the half circle of the 1 in. pipe measure distance L and subtract this from line 6 on the 2 in. pipe. Distance M will be transferred to the base of the right angle and the hypotenuse E-M is the developed line.
- 6) To find the true length of line F draw a right angle. Transfer distance F to the altitude. Subtract N on the 1 in. diameter pipe from 6 on the 2 in. diameter pipe and transfer P to the base of the right angle. Hypotenuse F-P is the true length line.
- Line G is the altitude of the right angle. 7 minus N

 —T is the base of the triangle and hypotenuse T-G
 is the developed line.
- 8) Line H is the altitude of the right angle. 7 minus R·S is the base of the triangle and hypotenuse H·S is the developed line.
- 9) Line J is transferred from the drawing to the altitude of the right angle. The base is distance R on the 1 in. pipe and J-R is the developed line.
- 10) K is a true length line.
- 11) Transfer the developed lines from the triangles to the half pattern in their proper sequence as shown. The spacing for the top 1 in. pipes and the 2 in. pipe will be transferred from the equally spaced points as indicated. The collar patterns are determined by multiplying their respective diameters by 3.14 as shown.

Add allowances for seams and joints and mark for forming.



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FABLE 510 N. Third St. & CO., INC.
Philadelphia 23, Pa.



Lewis A. Heaven Office Manager

See ad on page :

HEAVEN

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PIPE AND FITTINGS GUARANTEED QUALITY!

All Ajax fittings are made of high-grade, full gauge sheets . . . no seconds used! Quality is fully guaranteed. Your order, large or small, receives prompt, personal attention.



Scientifically designed to reduce air friction

For help on your heating problems our engineering department is at your service. Contact us . . . we'll gladly work with you.

Write for catalog of Furnace Fittings.



Ajax Furnace Fitting Co.

The Cincinnati Sheet Metal & Roofing Co. 216-20 E. FRONT ST. CINCINNATI, OHIO





NO GROUND CLEARANCE NEEDED!

Oran's amazing, new Dual-Air vaporizing burner is one of the greatest advancements ever made in vaporizingtype burners. This unique unit burns smoke-free, even under adverse draft conditions, with oil savings up to

There are four Oran Shallo-Well models for small homes, to meet climatic conditions anywhere in the

- 50,000 BTU output-Natural draft • 50,000 BTU output-Forced draft
- 65,000 BTU output—Forced draft
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WRITE US TODAY FOR COMPLETE INFORMA-TION ON THESE UNIQUE SHALLO-WELL OIL-FIRED FLOOR FURNACES!

ORAN COMPANY

2220 S. Third St., Columbus 7, Ohio





IT TAKES THE LOAD OFF THE FAN!

Aluminum louvers open fully, permitting capacity fan New heavy reinforcement strip adds strength and long life to the louvers, assures quiet operation and perfect counterbalance, prevents rattling. Deep shroud pro-tects shutter from high winds. Tie-rod, brackets and bearings inside frame, not exposed to weather. Special finish resists corrosion, Many other features.

Write for New Air-Fie Catalog 43-C

Illustrations and details of the complete Air-Flo line.

ONDITIONING PRODUCTS 2340 W. LAFAYETTE BLVD. - DETROIT 16, MICH.

Schweisheimer -

(From page 51)

time since during the whole flowering period she had hardly any attack of hay fever.

Air conditioning of residences may bring also relief to some forms of asthma (shortness of breath) which are produced by certain allergic conditions.

The Journal of the American Medical Association recently has discussed the use of air filtering systems in the treatment of hay fever. A New Jersey doctor had been consulted by one of his patients as to the advisability of installing a window air conditioning unit in her bedroom. He wanted to know whether there is any particular unit the Journal would recommend.

Several kinds of filtering systems are available, the Journal's expert stated. The ideal system is placed in the air intake which serves the entire house. As the most commonly used apparatus is mentioned the filter and fan combination placed in a window of the patient's bedroom. Some also provide cooling. A special apparatus which makes use of the principle of attraction of air particles to plates having a high electrostatic charge in addition to the filtering mechanism increases the effectiveness of particle removal.

One cannot expect too much from air filters, the Journal points out, if the patient does not stay in the room. In the case of pollen and mold spores which produce hay fever, most of the exposure occurs during the daylight hours. If the patient is willing to stay in the air conditioned room the greater part of the 20 hours, the results can be, of course, much better.

A fan can cool only those body areas exposed to the wind and only by evaporation of sweat. A fan cannot give too much relief from the heat since it only moves the present warm air. Experts have stated that, in the absence of body chilling, air cooling is a much more effective method of promoting comfort in hot weather than is the use of fans.

In the early years of summer comfort cooling, many buildings were grossly overcooled, and air conditioning was widely discredited. There are still instances of overcooling, as mentioned by Allen, Walker and James, but operators generally have come to realize that although 70 F may be comfortable with winter conditions



Phillip F. Leary **Purchasing Agent**

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WAVERLY HEATING SUPPLY CO.

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Boston, Mass.



See Ad on Page 23.

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MERCOID MERCURY SWITCH EQUIPPED CONTROLS NEXT TIME

THEY ASSURE HOME OWNER SATISFACTION

THE MERITS OF MERCOID CONTROLS ARE WELL ESTABLISHED

MERCOID-QUALITY AND RELIABLE PERFORMANCE

THEY ARE BY FARTHE BEST CONTROL BUY ANYWHERE TODAY

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THE MERCOID CORPORATION
4201 BELMONT AVE., CHICAGO 41, ILL





Robert Epstein

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QUINCY STEEL SUPPLY CORP.

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SIMPLIFY YOUR BUYING

You can save TIME by combining your orders for Conductor Pipe, Gutter, and Accessories with your orders for Galvanized Pipe, Fittings, Registers, and Cast Iron Furnace and Boiler Repairs.

ACT NOW! Your ordering will be easier, faster, and more economical when you buy in one large order

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COMFORTAIRE Winter Air Conditioner For homeowners who

For homeowners who care, here is the newest and finest in ferced air. Gas fired and fully automatic combining manimum hapting officiency and free-flow ventilation. Perfect for any plan... for closel, small recess,

Hammel



CIRCULAIRE

The finest built-in single and dual outlet wall heater that is first until heater that is first in the field for ossuring satisfaction and continuing geodwill. Sin models ranging in capacity from 11,500 to 50,000 87U. designed to fit into any stenderd 4" stud wolf without framing. Also arealable upon order installation in 6"





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Page 23.

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ORNAMENTS



STAMPINGS & SPINNINGS

Zinc Ornaments Available From Stock. Copper, brass, bronze, aluminum and stainless steel ornaments made up promptly.

If you don't have catalog K, send for it NOW.

MILLER & DOING

89 ADAMS STREET

BROOKLYN, N. Y.

MORE ESSICIENT **AUTOMATIC SHUTTER**

It agens the instant the fan or blaw starts, and closes the instant the fan blawer steps, Lauvers fit tightly, pr venting the entrance of wind, rain, and and insect pasts. And there is no law flytter. Sizes from 12" to 72"— all rectenguists.

ELGO SHUTTER

"ELGO" TYPE AUTOMATIC SHUTTER Front View (Open) MANUFACTURING CO.

2738 W. Warren

Detroit 8, Mich.

Free CATALOG

Arthur Owen

THE NEW 7" DIRECT DRIVE BLOWER MADE ESPECIALLY FOR SMALL HOME FURNACES

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-ORDER FROM US

Automatic Heating & Cooling Corp.

819 E. Fourth

Sioux City, Iowa

and winter clothing, it is not comfortable in a theater or store in summer.

Complaints about cooling or chilling effects of air conditioning are much less frequent today than in those early period. Proper adjustment of the air conditioning equipment will make disappear complaints about getting colds in an air conditioned room. In many industrial buildings today, building engineers allow the inside temperature of the buildings to rise somewhat when the shift change approaches, in order to ease the differences in inside and outside temperatures and their effects on the human body.

The problem whether people living in air conditioned rooms are less inclined to colds, has not yet been solved A. D. Brandt mentions that one study in a large office building has indicated that there is no significant difference in the frequency rate of illnesses between occupants of air conditioned and non-air conditioned buildings. Others have reported considerable reduction in the illnesses rate through air conditioning.

Rudolph -

(From page 53)

before pouring, the insulating fibreglas strips are reinforced with strips of ordinary fibreboard, or composition board, cut from panels of the type applied on house walls.

"In some places, where it appears the house might not



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on Page 23.

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ASSOCIATED SUPPLY CO.

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Brockton, Mass.

ADAMS

CHIMNEY CAPS

(CAST IRON)

For 6, 7, 8, 9 & 10"

Chimney

Extension



Buy Adams Known Quality



ad on page 23

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TUSTIN & HOWARD

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MODEL

1236

36-in, thros

WRITE FOR

BULLETIN

Libert HI-Spied SHEAR

- Maintenance
- SPEEDS Production
- SAVES Manpower

The Libert has amply proved its advantages by turning out top production-shearing flat or formed sheet metal, internal or external, plain or irregular shapes rapidly, accurately, cleanly!

Equally effective in maintenance work, Libert is cutting costs to rock bottom. Edges are smooth, need no finishing. Unskilled operators produce accurate work at once.

Sizes up to 60-in, throat, 10-payer coencity.

LIBERT MACHINE COMPANY Green Bay, Wisconsin



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AULBERRY HEAT & POWER SUPPLY

438 Mulberry St.

Newark, New Jersey

PREMOLDED CALKING



for corrugated sheet metal roofing, siding

Calk as you erect! Fabco Corrugated Calking Strips are the labor-saving shortcut to weathertight corrugated construction. Premolded to fit all standard sheet corrugations, of compositions of rubber or asphalt, the calking strips are quickly and easily installed as sheets are laid. They form a durable seal at all openings where sheet corrugations meet flat surfaces such as flashings at ridge, gutter, corner and curbing and around doors and windows. They also seal around the shank of the fastener.

Placed between aluminum sheets and structural steel members. they insulate against galvanic corrosion. The strips can be cut. punched or drilled with ordinary tools. Supplied also for calking along a single corrugation or at required diagonals for roof hip or gable sealing.

For full information and diagrams of typical corrugated construction assemblies, write for Bulletin 501 - TODAY!

FABRICATED PRODUCTS COMPANY WEST NEWTON, PA.



THERMO-MAT emits live penetrating RADIANT heat . . . Keeps feet and legs warm when standing or sitting Or keeps tools warm on the bench! Wonderful on cold, concrete floors; in poorly heated rooms, in factories at benches and machines, at desks, counters, stands etc. Also melts ice and snow on doorsteps. Safe, economical; operates for a few cents per day. Maintains uniform temperature. Plugs into any 110 Volt circuit. Reversible, neoprene rubber compound - lasts for years. Order by mail today! \$11.95 delivered. Thousands in use, performance guaranteed! Free Folder.

THERMO-MAT CO.

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BETTER

the GRAND RAPIDS deluxe FURNACE CLEANER

Built by men who understand the problems of furnace cleaning, the Grand Rapids Furnace Cleaner has been developed into a highly serviceable unit meeting all the requirements for faster, easier and more profitable cleaning:

DURABLE—COMPACT CONSTRUCTION • LIGHTWEIGHT ALUMINUM HEAD ASSEMBLY • HIGH POWERED MOTOR • 9" DIAMETER ROTARY FAN • LARGE CAPACITY HEAVY DUTY STEEL TANK . FLEXIBLE RUBBER CLEAN-ING HOSE WITH 2" INSIDE DIAMETER • EFFICIENT OUTSIDE FILTER BAG • FREE ROLLING SWIVEL-TYPE CASTER WHEELS • ENGINEERED FURNACE CLEANING ATTACHMENTS.

Write today for complete information

VACUUM CLEANER CO.

227 STEVENS ST., S.W.

GRAND RAPIDS 7, MICH.



have the best drainage possible, we insulate with the moisture barrier beneath the lake gravel fill, as well as just under the concrete," said the contractor. "The ductwork itself is ordered from the factory in continuous lengths, cut as close to size as we can get, to keep jointing to a minimum.

'Just before pouring concrete, of course, we put on the reinforcing mesh which is common wire, in 6 by 6 in. mesh pattern."

What about actual heating?

It was explained that the homes were expected to have a heat loss of 43,000 Btuh, downstairs; gas furnaces for the job are rated at 64,000 Btu input, to adequately warm the first floor and leave heat for finishing off and living upstairs, if desired. Reflective aluminum insulation is used in sidewalls, and rock wool in the ceilings. The sidewall insulation is applied directly to the sheetrock being used, a foilback type.

According to calculations the U factor for the walls is .024 and for the ceiling, 0.143. These figures are below the standards set by the Federal Housing Adminis-

"All told, we think the heating problem is handled quite satisfactorily, more permanently, and at only a little higher cost than would be required with any other system," said Dvorak. "We think we have positive assurance that 2 in. of concrete will always be there for ductwork.

"We eliminated metal hangers on the ductwork, be-



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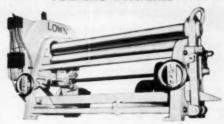
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cause we felt they would pierce the moisture barrier and do more harm than good."

This new heating system has attracted attention in Cleveland to the extent that Jack Scheel, chief heating inspector of the city, visited the development (in Warrensville Hts., a Cleveland suburb.) and studied the details with the view in mind of incorporating the system's principles and specifications in a revision of the city heating code. James Martin of the Industrial Relations Dept., National Warm Air Heating and Air Conditioning Association, also expressed interest.

Konzo -

(From page 58)

constructions, as far as inside surface temperatures are concerned. For example, an uninsulated frame wall having a total resistance of 3.85 units will show a temperature drop from room air to wall surface of about 13 F for an indoor-outdoor temperature difference of 70 F. Similarly, a fully insulated wall having a total resistence of 14.3 units will show a temperature drop of about 3 F.

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The resistance concept of heat transfer can be applied to problems other than that of heat flow through building materials. The problem is complicated since the film resistances are not readily determinable for cases such





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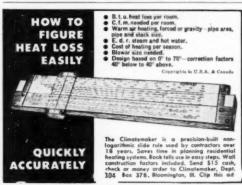
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as the metal walls of a warm air furnace. However, the resistance method can be used to study comparative heat transfer of cast iron and steel furnaces. The resistance of cast iron is given as 1/331 units, while that for steel is 1/313 units, or an apparent difference of about 6 per cent. The preceding values are for a 1 in. thickness of metal. Assuming that two furnaces of identical shape are each made of 1/4 in. thickness of cast iron and steel, the actual resistances become 1/4 (1/331) and 1/4 (1/313), or 0.00075 and 0.00080 units, respectively. These metal resistances are small when compared with the film resistances on the inside and outside surfaces of the furnace walls. As long as both surfaces are dull and not polished or shiny, both furnaces will have practically identical heat transfer properties.

As shown in earlier examples of the effect of wind velocity on film resistance, the resistance to heat flow through the layer of air or gas that lies next to the metal surface will be sharply reduced by increasing the velocity of the air or gas over the surface. A discussion of the change in film resistance with velocity is beyond the scope of these articles. However, the compactness of the forced air furnace as compared with the gravity furnace is a good example of how air velocity increases can be made to cause more heat flow to take place through a given surface area. Undoubtedly, the trend towards more compact furnace equipment will continue. The key to solving this problem of compact-



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McLARTY -SYSTEMS ness will consist in reducing the resistance, not only on the outside of the furnace but also on the inside of the furnace.

Summary

The writer is of the opinion that the subject of heat flow through building materials can be made more understandable if the concept is reduced to that of adding resistances to each and every barrier in the path of heat flow. The terms conductance and conductivity, which are commonly used, involve the complicated statement that the "overall heat transfer coefficient is equal to the reciprocal of the sum of the reciprocals of the individual conductances." The statement is correct, but the required calculations prove more puzzling than the income tax blank to the average heating contractor.

The concept of adding resistances is not a new one, and has a counterpart in electrical flow to which most high school students have been exposed in their studies. It should be possible for any heating contractor to calculate the total resistance of any building construction, no matter how unconventional, as long as sufficient information about the individual resistances of the component parts are made available. Furthermore, it should be possible to calculate the surface temperatures and temperature drops through each and every resistance in the construction. With these thoughts in mind the writer has attempted to present these ideas in a simple and logical fashion.



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for October 1, 1951

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The names and addresses of the publisher, editor, managing editor, business manager are:

Publisher, F. P. Keeney, Chicago, Illinois.

Editor, John E. Peterson, Chicago, Illinois.

Managing Editor, John E. Peterson, Chicago, Illinois.

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[My commission expires February 10, 1954]

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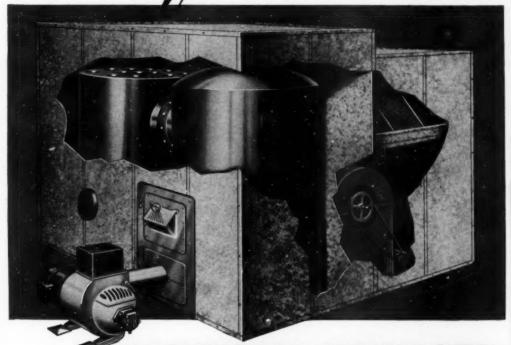
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